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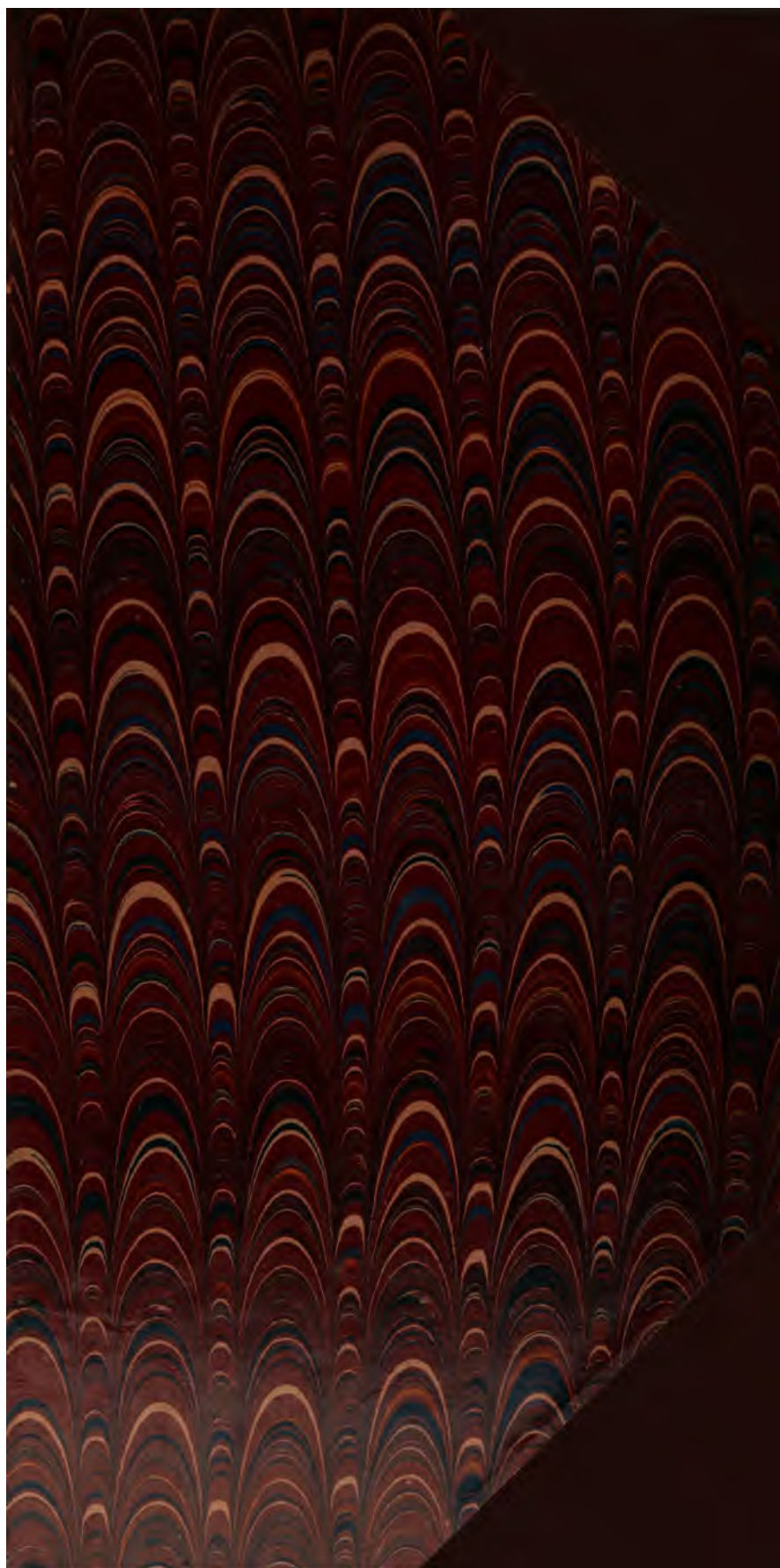
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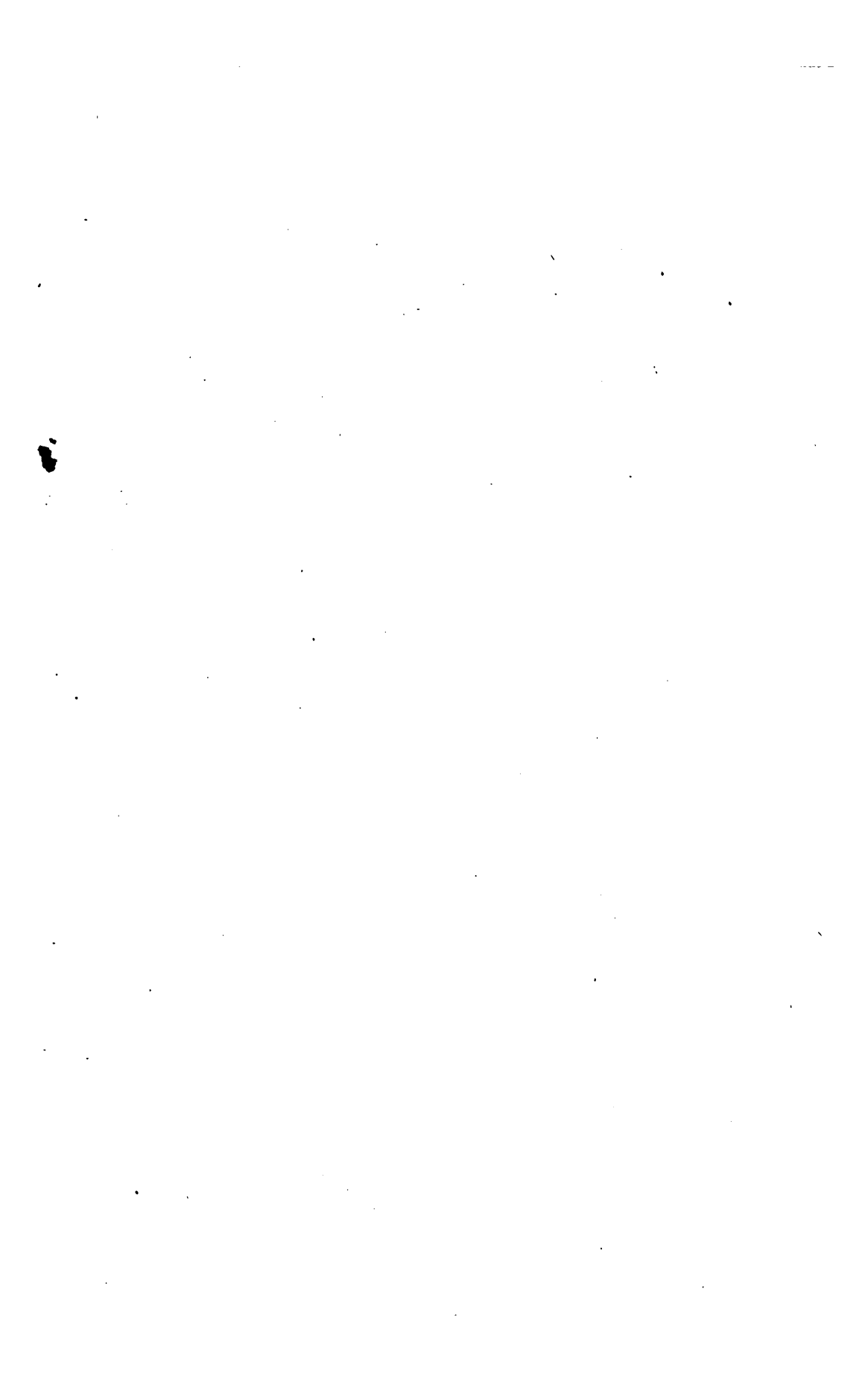
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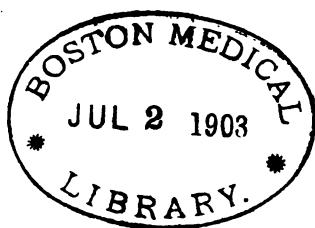
THE
DENTAL PRACTITIONER
AND ADVERTISER.

A QUARTERLY JOURNAL, DEVOTED TO
THE ADVANCEMENT OF THE
DENTAL PROFESSION.

W. C. BARRETT, M. D.; D. D. S.;
EDITOR.

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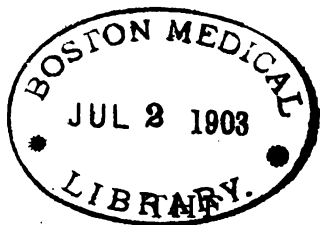
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DENTAL PRACTITIONER

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VOL. XXIV.—BUFFALO, N. Y., JANUARY, 1893.—No. 1.

A BRIEF STUDY OF THE MOLAR TEETH OF THE PROBOSCIDIÆ.*

BY W. C. BARRETT, M. D., D. D. S., BUFFALO, N. Y.

Read before the American Dental Association, Niagara Falls, N. Y., August 2, 1892.

The student of comparative dental anatomy nowhere, in all the broad realms of nature, finds better opportunities for study than in the teeth of the Pachydermata, or thick-skinned animals, a sub-division of the great order of the Ungulata, and in which the Proboscidiæ form a sub-order. In tracing the modifications of dentition through the different species, it must be remembered that a number are lost, and the regular graduations do not appear.

Nor should this be considered a thing strange. When we reflect that of the living animals existent upon the earth at this time, the remains of scarce one will probably be found sufficiently intact to allow of any inspection a few ages hence, and then remember the millions of years which were required to produce any material modification, it is no wonder that many important genera are lost. Countless numbers of animals are dying annually. How often is the complete skeleton of even a bird found in the fields or woods?

* The beautiful sections of the teeth of the Elephas, and most of the accompanying specimens, were prepared in the Natural Science Establishment of Henry A. Ward, Rochester, N. Y., and loaned to the author for study and illustration.

It requires a peculiar combination of circumstances to produce a fossil. Only such organized beings as existed in situations that, through geological changes, allowed their sudden imprisonment within a forming matrix, would find these favoring conditions. A sudden upheaval of plastic material, like clay or fine disintegrated rock, might so bury them that ordinary decay would be impossible. Then, under very unusual circumstances, there might be a slow substitution of the organic material by mineral elements, without the loss of the appearance of structure, and a mineralized, indestructible fossil would be the result. It is only at the margins of great bodies of water that these favoring circumstances can exist. The changes there may be induced by unequal cooling and shrinkage of the crust of the earth, and it will only be in such locations that the proper investing matrix will be found.

In the interior of great bodies of land the geological changes are usually much slower, and hence there is no opportunity for mineralization. The more violent geological modifications are brought about by volcanic action, and the heat destroys all organic matter. Hence it is only the very ancient animals and structures which lived near the margins of great seas, or within them, that exist in a mineralized fossil form to-day. The terrestrial fauna and flora have entirely disappeared, no trace of them being left, and thus have been obliterated the modifications of orders, and the traces of many early species of the Mesozoic and Tertiary ages. Occasionally the upheaval of what was once the bed of a great sea brings to light hidden treasures, as in the fossil beds of Wyoming, in the centre of what is now the North American continent. Wherever such a change in the level has taken place, it invariably brings to light many strange and intermediate forms, but there are not enough of them to make a series.

But in the pachyderms, as they now exist, or have existed within comparatively modern times, modifications may be traced which are a sure indication of the gradual development of certain species through the lapse of cycles of time. We find families which in their dental development seem to the ordinary observer as widely separated as the East is from the West, but which a close examination proves to be near congeners.

What analogy, for instance, is there between the tapir, the last remnant of a great Eocene family, with its forty-two teeth in full use at one time, and the elephant, the final existing species of the almost extinct Proboscidiæ, having only six? And yet, gradations are plainly indicated. The molars of *Tapirus* have distinctly cone-shaped divisions of the crown. In the *Dinotherium* these are also found, but the separate denticles have united, and the cone-shaped prominences have become sections, each having its separate root. There are modifications of this change found in certain intermediate forms, which indicate the process of union of the

separate teeth, showing that both dentitions had the same common source.*

In the fossil mastodon, named from the shape of its teeth (*mastos*, a nipple, and *odous*, a tooth), we find the same general form of dentition, but materially modified as to structure. Finally, in *Elephas* there is a yet further modification, the cone-shaped prominences being lost, and the separate denticles taking the form of dentinal plates. The structure, too, is changed, but there still remains the body of dentine surrounded by enamel, the whole being united by cementum, the modifications being those which would be induced by the gradual change of the denticles into dentinal plates.†

The six incisors of the tapir we find reduced to four in the mastodon, and of these the inferior ones are rudimentary, while the superior permanent pair, finding no lower ones with which they might occlude, grow to an enormous size and are developed into tusks, precisely as the incisor teeth of rodents grow to a great length when the opposing one is lost by accident.

In the *Dinotherium* it is the superior incisors which have become rudimentary, and the lower ones are in the same manner developed into great tusks, preserving their natural outward curvature. In the elephant the incisors follow the law of its congener, the mastodon, keeping the natural curve that is imparted to them by the shape of their sockets, and develop into those enormous tusks that distinguish the species. The study of the incisor teeth of the elephant is a fascinating subject, but the limits of time demand that I should confine myself mainly to a consideration of the molars. Dr. Miller, in the *Dental Cosmos*, has given a very valuable series of papers upon the development and certain pathological

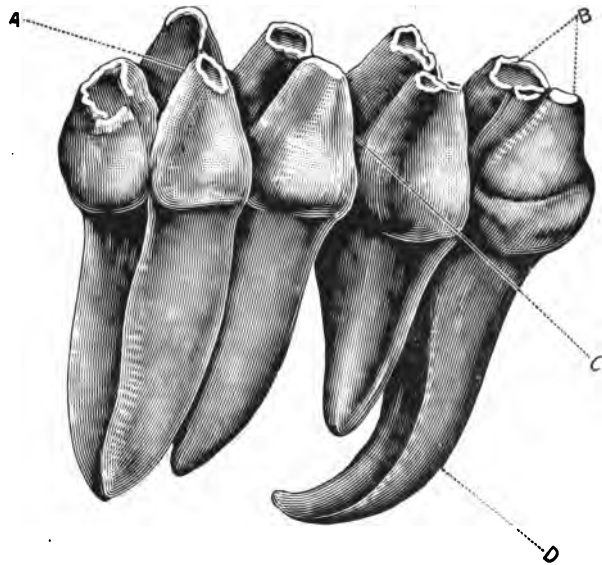
* The near relation of most of the *Pachydermata* is indicated by the peculiar form of the nose or snout. In the hog this is prolonged and muscular, and serves it for explorations in the ground. In the rhinoceros it is an extremely flexible and pliant organ. In the tapir it is extended into a prehensile lip between the nostrils. The trunk of the elephant is but the prolonged and specialized nose of the hog.

† The human tooth, and that of the carnivora, consist of a body of dentine, covered with enamel in the crown and cementum in the root. If the human tooth were enveloped in the jaw as completely as that of the elephant, and were developed entire before eruption, it may readily be seen that the cementum would naturally extend up over the crown and cover the enamel. If, now, such a tooth be worn away until the dentine is reached, it would present almost exactly the characteristics of that of the elephant,—a ring of enamel enclosing a body of dentine, the whole enveloped by cementum. The elephant's molar is made up of a number of such separate denticles, bound together by the enveloping cementum, each presenting the same structural arrangement of tissues that the human tooth would do under like circumstances. The modifications that appear so extreme are, therefore, only the natural changes demanded by peculiar environments.

disturbances in the tusks of elephants, and to that let me refer the student who desires something further in this direction.

The dentition of *Mastodon giganteus*, of North America, is a distinct modification between that of the Dinotherium and the elephant. A part of the molars are succeeded by vertical successors, as is usual in the diphyodonts, so that they are, strictly speaking, true premolars. The denticles which make up the compound tooth follow the general law in mammalian tooth-structure, and are formed of a body of dentine covered by enamel, with a root envelope of cementum. (See Fig. 1.)

FIG. 1.



Tooth of *Mastodon giganteus*. A, posterior tubercles; B, anterior tubercles; C, depression between the denticles; D, long curved anterior root.

It may be seen that the structure of this tooth does not essentially differ from that of its congener, the elephant. If the different sections were consolidated by a layer of cementum, with a dentinal base, it would present nearly the same characteristics.

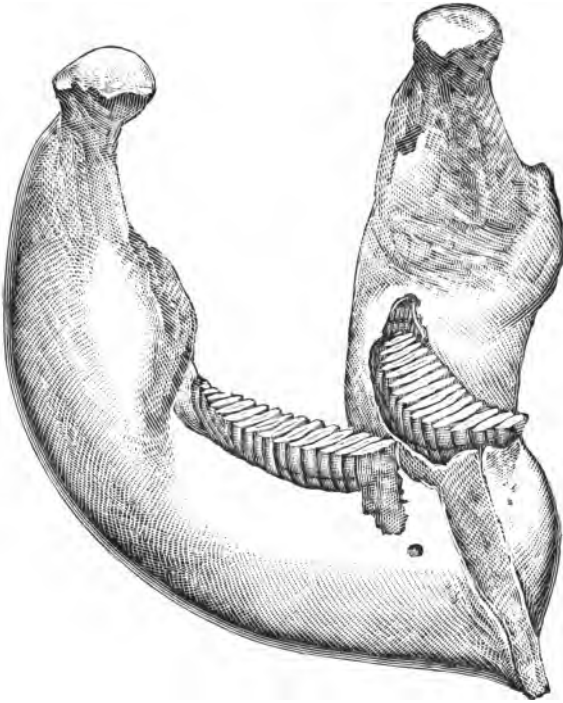
In the molar of the true elephant, we find a remarkable modification, not only in structure, but in development. The succession, instead of being

vertical, is horizontal. The formula is as follows: $\frac{2-2 \text{ m. } 6-6}{0-0 \text{ m. } 6-6} = 28$.

Of the incisors, two are deciduous, while the permanent ones form the great tusks. The molars of the elephant are of great proportionate size, especially those which make their appearance late in life. There is never but one on each side of the jaw in full use at any time, and all through

life there is going on the constant process of the shedding of this and the formation and advance of its successor from behind. (See Fig. 2.) The food of the elephant is of an exceedingly coarse character, and although the structure of the molars is such as to offer the greatest resistance to attrition, yet no other form of dentition would be sufficient for the long life of the animal.

FIG. 2.



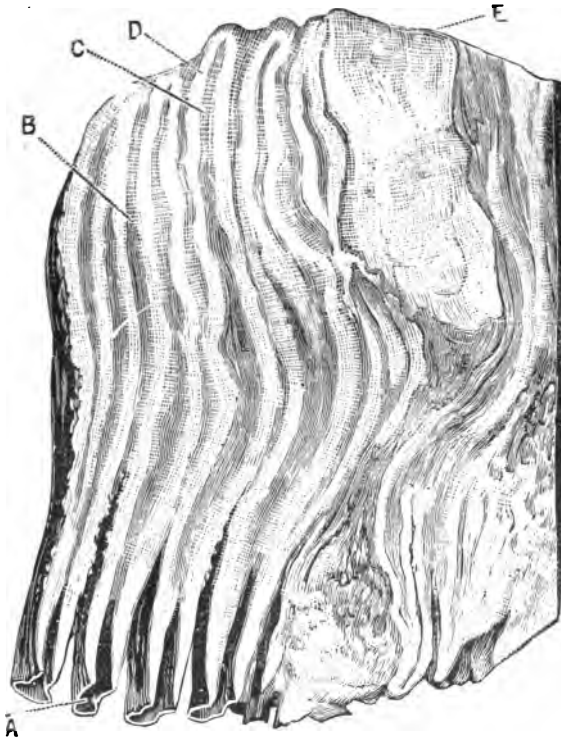
Lower jaw of Asiatic elephant, showing the single tooth that alone is in full use at any one time. The arc of the circle which they describe in their advancement is indicated, and the thickened ramus which contains the germs of the plates of the succeeding teeth. The anterior roots have been formed and are in process of absorption, and the anterior plates are nearly worn away.

The germs of the six molars on each side of each jaw exist within the body of the maxillæ, and are developed in turn as the predecessor is worn out and shed. The structure is very complex, and is shown in the chart which I exhibit. (See Fig. 3.) The teeth are made up of transverse, perpendicular plates, which are developed separately within a crypt in the jaw. The size of these plates depends somewhat upon the age of the animal. I exhibit to you the bisected jaw of an adult elephant, and as I open it you are able to see the crypt or chamber which contains these developing plates. Each of them consists of a body of dentine, surrounded by an enamel covering. The development is from these

elevated points, as shown in this figure, which give to the forming plates a serrated appearance, not unlike that sometimes seen in the newly erupted incisors of children. These plates are open at the base, the cavity being occupied by the pulp-tissue from which the dentine is developed.

I have not had the opportunity to examine any fresh specimens microscopically, so that it is impossible for me to say in just what manner the enamel is formed; but as that tissue covers the whole plate, and as

FIG. 3.



Vertical section of molar tooth of elephant. *A*, open ends of dentinal plates, occupied by the pulp; *B*, cementum layer, binding the different plates together; *C*, dentine, inclosed within the enamel; *D*, enamel covering of plates; *E*, masses of cementum deposited between irregularly developed plates.

The tooth was not fully erupted, as the cementum covering had not yet been worn sufficiently to expose the enamel.

during the process of formation these are separated by a considerable space, it is probable that there is a separate enamel-organ for each one, and that this continues its function to the time when the plates coalesce into the complete tooth. In the rooms of the Odontological Society of New York, there is the complete skull of an elephant, the

jaws bisected as are some of those now before you, but in which the separate plates are in a more advanced condition than are these, and which therefore more fully illustrate the formation. In that, the plates are perhaps three times as large as the ones I now show you.

The growth of these plates continues until the enamel-membrane is exhausted, when there is, from the several divisions of the pulp, a further deposition of dentine, which forms a strong base for the whole, uniting the plates into a solid body. As the tooth after eruption is worn away, roots are developed, which serve to retain it in position. In its earlier stages it is held by the great body being within the socket.

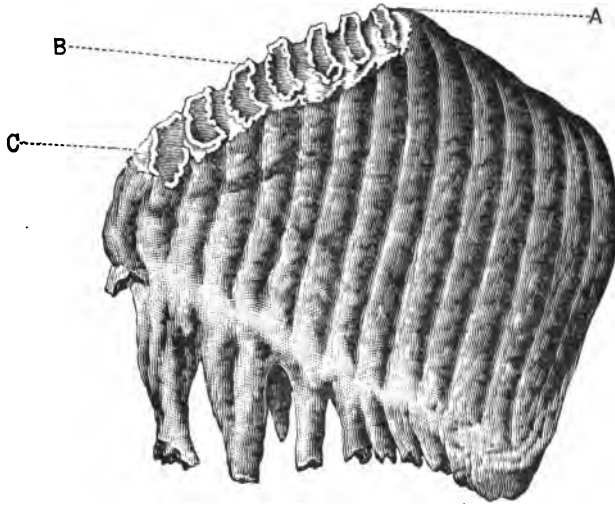
Coincident with the formation of the great body of dentine at the base, the enveloping membrane begins the deposition of cementum between and about the separate plates, thus uniting their upper portions into a solid body as the dentine unites the base, and in this manner is formed that complex structure illustrated in the diagrams exhibited, as well as by the numerous prepared sections upon the table before me. There is, then, here in the center of each plate, a body of dentine surrounded by a complete ring of enamel, and uniting the separate plates a stratum of cementum, thus presenting a yet more perfect arrangement of alternate dentine, enamel, and cementum than is found in the molars of the more common *Graminivora*. The several tissues offering a different degree of resistance, the teeth are worn into the alternate ridges and depressions that offer the most perfect surface for the proper comminution of coarse food.

As the deposition of the enamel about the body of the dentine in each separate plate proceeds, it assumes a wavy or undulating appearance. In the Indian elephant, and in the extinct *Mammoth*, the sides of the enamel-walls are parallel, thus causing the enamel to present the appearance of a complete and regular ring. In the African elephant, the body of the dentine is much thicker in the center, and the enamel covering is expanded until there may be a complete separation in the middle of the ring, giving to the dentine a lozenge shape, and to the enamel of each lateral half of the tooth a zigzag appearance. This is very apparent in some of the teeth now before you, and by this peculiarity of structure it is comparatively easy to determine to which species each belonged. In the *Mammoth*, the plates are thinner and more numerous, as may be observed in this specimen.

In the procession of the teeth, a part of the posterior one comes into use before its predecessor is thrown off, for the whole process is a gradual one. While all the posterior plates are covered by the gum and bony tissues, the anterior ones are in use. Here is a tooth in which it may be seen that the first three or four plates are considerably worn, while the posterior ones bear no such marks. (See Fig. 4.) In the lower jaw

the forming teeth lie within the ramus, while in the upper they are within the retreating portion. In the course of their descent, therefore, following the general contour of the jaw, they describe the arc of a circle, instead of advancing in a straight line. This peculiar conformation, therefore, presents the anterior angle of the tooth first. As it gradually descends from above and reaches the plane of the body of the jaw, the tooth

FIG. 4.



Upper molar tooth of Asiatic elephant. *A*, gum-margin and limit of erupted plates; *B*, enamel of the plates; *C*, much worn anterior plates, the roots of which have begun to develop.

The line of the summits of all the plates, from *C* to the posterior unerupted ones, is nearly the arc of the circle which the tooth describes in its advance. If the roots were continued they would reach the apparent pivot or axis upon which the tooth seemingly turns in its progression. This provision brings the several plates into successive use.

assumes a horizontal position, and the successive plates are brought into full use. Before its eruption it stands almost at a right angle to its predecessor.

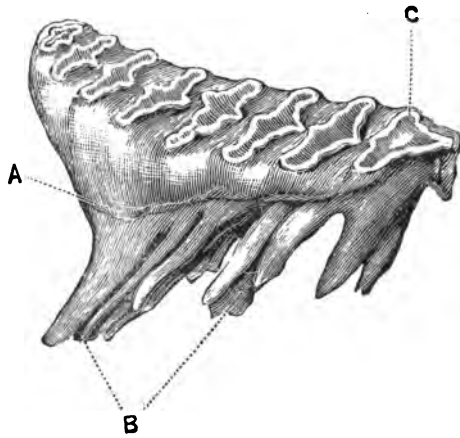
This peculiar method of progression forms one of the most striking characteristics of the dentition. It brings the plates successively into use, and by the time the last one is in full action the anterior ones are considerably worn away. The tooth will then have a wedge shape, and its anterior border would have but a comparatively slight hold in the jaw, were it not that this is compensated by the development of the anterior roots. (See Fig. 5.) In the course of the attrition the foremost plates become worn down to the dentinal base and are smooth, while the posterior ones yet have their enamel intact. This serves a useful purpose in mastication, for, as Owen remarks, the coarse limbs and twigs of trees

are broken up and crushed on the anterior smooth plates, and thoroughly comminuted between the deeply ridged posterior ones.

When the tooth becomes worn down so far that the basal mass of dentine is seriously interfered with, the pulp seems to lose its functional power, and becomes exhausted. A reversal of the process now sets in, and there is resorption of the roots, until the advance of its successor crowds it forward and finally out of the jaw, the other taking its place. This process is repeated in the several teeth until the last one appears, and this is sufficient for the needs of the animal until it dies from old age.

Each successive tooth presents an increased number of plates, and therefore lasts for a longer time than its predecessor. The sixth molar seems to develop more slowly than any of the others, and to have an unusual number of plates, which come into use with increasing tardiness.

FIG. 5.



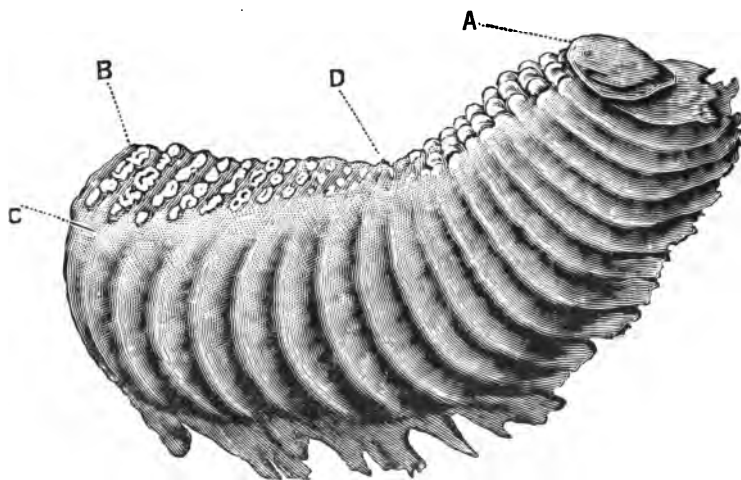
Molar of African elephant nearly worn out, and showing the process of extrusion from the jaw. *A*, basal body of dentine; *B*, the posterior roots, developed as the body of the tooth is worn away, for the purpose of holding it in the jaw; *C*, anterior plates worn down to the dental base.

The anterior roots have commenced the process of absorption.

It would seem that in an animal that lives to an extraordinary age the plates are continually added, that the tooth may serve for mastication until death. Here is such a one. (See Fig. 6.) The animal to which this belonged was probably considerably past the half-century mark, and yet it will be seen that there are many years of service left in the organ. While the first plates show the attrition produced by actual use, the last ones are yet in the process of formation, being quite immature. Of the twenty odd plates only ten have as yet been brought into action, and some of these are not worn down to the solid enamel. There was here a dental provision for many years of life.

I have here the skull of a young Indian elephant, in which the points of the deciduous tusks are but just discernible. (See Fig. 7.) The exact age of the animal I have not been able to determine, any further than by the appearance of the skull. But it will be observed that the tissue around the extremities of the tusks is in a cartilaginous condition, and that they had not yet protruded through the gum, which should occur between the fifth and the sixth month. Yet the first molar is completely erupted, and shows some attrition, so that it is probable that the young animal at death was three or four months old. The bones of the head, while firmly united, are yet very frail, and the zygomatic processes but partially ossified. The first molars, which cut the gum in the second week, with portions of the second, are plainly visible, and illustrate the formation of the teeth very perfectly.

FIG. 6.

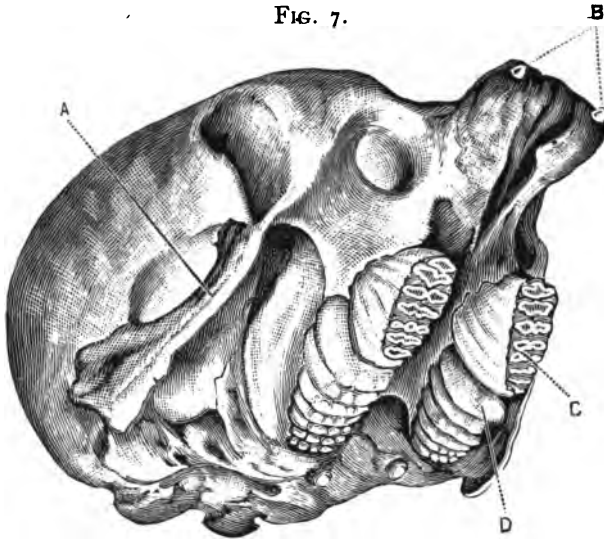


Lower molar of Asiatic elephant. *A*, posterior plates in process of formation; *B*, anterior plates, but little worn; *C*, gum-margin; *D*, plates just appearing through the gum. All posterior to this point were yet unerupted.

This tooth was evidently the sixth molar of an elephant that had passed the half-century of its existence. The crescentic shape is the arc of the circle which it described in descending. It is probable that as the anterior plates of the sixth or last molar are worn away, others continue to be found at the posterior border as long as life continues. This one consisted of twenty-three plates. It measured fifteen inches in length, and weighed fourteen pounds in its dried state.

In the upper jaw the first molar has six plates, while in the lower there are seven. The anterior plates of the second molar were not yet erupted, but they are completely united by cementum, while the posterior ones are only held by the dentine at their base. The crypt for the third molar may be distinctly observed, although the plates are not sufficiently developed to be plainly seen. (See Fig. 8.)

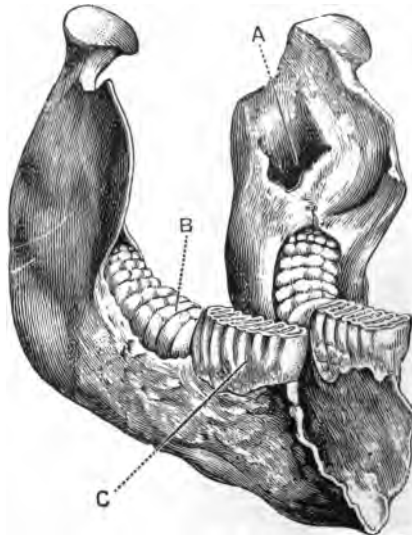
FIG. 7.



Upper jaw and skull of a very young elephant. *A*, the partially ossified zygoma; *B*, the points of the unerupted deciduous incisors or tusks; *C*, the first molar, somewhat worn and showing the transverse structure of the plates; *D*, the plates of the second molar, covered by the gum-tissues and unworn.

The cementum between the plates has not yet all been deposited, and the alveolus was not fully developed.

FIG. 8.



Lower jaw of very young elephant. *A*, opening in the ramus of the jaw, in which may be seen the germs of the succeeding plates; *B*, unerupted plates of the second molar; *C*, first molar, showing the anterior plates more worn away than the posterior ones.

The first teeth in descending move through the arc of a smaller circle than their successors, which make their appearance when the jaw is longer and larger, and therefore they necessarily contain a less number of plates.

Owen says that the first molar, which is in complete use at three months, and is shed at about two years of age, usually has four plates, but in this specimen there are more.* The second molar, according to the same authority, has eight or nine plates, and that is about the number in this. He gives the length of the first molar at less than an inch, while in this specimen they are fully two inches. The second molar, he says, is about two and a half inches in its antero-posterior diameter. In this skull, although not fully developed, it is more than three inches. It may thus be seen that there is no determinate number of plates in different individuals, but that it varies with the development.

The third molar has from eleven to thirteen plates, and is shed during the ninth year. The plates of the fourth molar number fifteen or sixteen, and it is shed from the twentieth to the twenty-fifth year. The fifth molar has from seventeen to twenty plates, and is probably not shed until the sixtieth year. Thus the first molar lasts but about two years. The second remains about four years, the third a little longer, the fourth eleven or twelve years, the fifth thirty years, while the duration of the sixth has not been definitely determined.

The plates of the sixth molar are from twenty-two to twenty-seven, and it is from twelve to fifteen inches in length. Owen says, in his "Odontography," that from its superior depth and length this should continue the work of mastication until the ponderous pachyderm has passed the century of its existence, but in his "Anatomy of the Vertebrates" he recommends further observation of this tooth in captive elephants. Mr. Corse, in his memoirs, has figured a seventh and eighth molar, and this would very materially add to the probable length of existence of the animal. But, accepting the number of plates in each successive molar as given by Owen, it is comparatively easy to tell the age of any elephant by the condition of the existing molars.

The advance in the grinding-teeth is accompanied by a like advance in the alveolus, which is developed with them. The tooth, as it emerges from the body of the jaw, is enveloped in the cancellous bone which forms the socket, and as it moves forward there is a corresponding progression of the alveolus which retains it, and which is finally resorbed with the roots of the teeth as they reach the most anterior point, thus allowing their final removal. At the same time there is a new formation about the succeeding molar, which passes through the same stages. It would be difficult to conceive how the progression of the teeth could be accomplished by any other means.

* I have not been able to make the number of plates, or the measurements of the teeth that I have examined, conform to those laid down by Owen. There is undoubtedly a considerable variation in individuals, and the different species do not follow exactly the same rule.

Although there are no deciduous molars, the elephant is provided with milk incisors, or tusks, which grow to the length of but a few inches, and are shed between the first and second year. They are almost immediately succeeded by the permanent ones, which, arising from persistent pulps, like the incisors of the Rodentia, like them continue to grow through life.

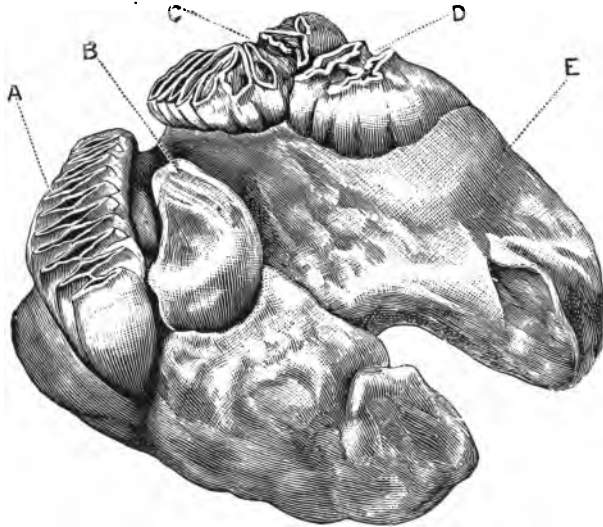
Abnormalities in the development of the teeth of these great mammals are not unknown. Especially are the incisors or tusks liable to irregularities. Not infrequently is their direction changed, through some injury to the alveolus. I have more than once seen captive elephants, the points of whose tusks crossed each other. Occasionally one tusk is considerably more elevated than the other. To a certain extent they are movable in their sockets, and a continuous pressure upon them will change their direction and relative position. These irregularities may be corrected, when the animal is not too old, by any force continuously applied, precisely as the human teeth are made to assume new positions by artificial means.

In the rooms of the New York State Agricultural Society, at Albany, is the skeleton of the celebrated Cohoes mastodon, which was dug up some years since. The inferior jaw shows the loss of one of the molars, probably through some accident, and the alveolus has completely closed over the place. Probably the animal was not a very old one, but there are no signs of another molar beneath it. If it were possible to make a section of the jaw, perhaps something of interest might be discovered. I noticed this peculiarity some years ago, but have never seen it mentioned by any author. I have not had the opportunity to make a very thorough examination of the case, something which I propose to do in the near future.

The most singular malformation that I have ever observed in any animal, appears in the upper jaw of the celebrated elephant "Jumbo," which was killed in a railroad accident a few years since. This was an African elephant of prodigious size, although it had scarcely reached the age of full maturity. Captive African elephants are rare, the most of those in menageries being of the Asiatic species. The skeleton of "Jumbo" was mounted at the Natural Science Establishment of Professor Henry A. Ward, of Rochester, N. Y., for Barnum & Bailey, the showmen proprietors of "Jumbo" when alive, and is deposited in the rooms of the Society of Natural Sciences, in Central Park, New York City. I visited the skeleton not long since, and called the attention of the superintendent to the many points of interest it presented, suggesting the advisability of an examination by making sections of the jaw. I was informed that as it was not the property of the society this could not be done, but they would endeavor to obtain the necessary permission from Mr. Bailey to do it.

I exhibit here casts of the upper jaw, obtained when the skeleton was mounted in Professor Ward's establishment. (See Fig. 9.) It will be seen that the aberration was remarkable. There are two molars in each jaw, fully erupted. At his death "Jumbo" was about twenty-five years of age, and this would make of these the fourth in succession, provided the usual rate of progression had been followed. Yet Owen and Corse say that the fourth molar has about fifteen plates, while these have but ten. The same authorities give the length of the tooth at about eight inches, and that is the size of these. So we may probably accept them as the fourth molars.

FIG. 9.



The upper teeth of "Jumbo," the African elephant exhibited with Barnum's circus a few years since.

A, the fourth molar in succession, comparatively regular but occupying a position outside the normal, and standing at an angle of nearly thirty degrees. The tooth is curved, the buccal aspect being the convex surface.

B, a few of the plates of an abnormally developed fifth molar. This tooth is as irregular in structure as in position. The plates run nearly longitudinal to the antero-posterior axis of the tooth.

C, the irregular left fourth molar. The posterior plates of this tooth stand at an angle of nearly ninety degrees to the anterior ones, the concave surface being the lingual aspect.

D, a few irregularly developed plates of the left fifth molar.

E, the alveolus, probably containing the undeveloped plates of the fifth molar.

None of the visible teeth occupy their normal positions, nor are any of them of the usual form. The right molar is nearest the normal, yet this is curved considerably, the convex surface being outward. Instead of lying longitudinally in the jaw, it stands at an angle of about thirty degrees. The plates, however, are normally developed.

Lying inside the posterior half of the tooth, and at nearly the same angle with the jaw, are the first five or six plates of the succeeding molar.

In the plaster cast it is difficult to determine just what was the situation, but the plates were markedly distorted, some of them lying almost longitudinally, instead of transversely. Those which were not yet fully developed were on a still different plane, the posterior half of the tooth standing at an angle to the rest. Only a section of the jaw would reveal the exact manner of their formation.

The left fourth molar presents a still greater anomaly, the convex side being inward. At about the junction of the fifth and sixth plates the tooth makes a sharp bend, the posterior plates standing at an angle of nearly ninety degrees to the rest. The developed portion of the left superior fifth molar presses against the deflected posterior plates of its predecessor, in such a manner as to tend to turn it upon its axis. The plates of the fifth molar are irregularly developed, the first and second being nearly an inch apart, and the others separated by a very wide layer of cementum.

The general aspect of this case is that of the irregular development of the fifth molar without the removal of the fourth, and the malposition of all of them. The fourth molars are worn, the anterior plates being almost reduced to the dentinal base, but there has not apparently been the usual absorption that should take place at this time. The alveolus, especially upon the right side, has been extraordinarily developed, as might naturally have been expected. Those who closely observed the animal in life could not fail to mark the asymmetry in the jaws. I myself noticed it long before I had an opportunity to study it.

What was the cause of this irregularity? The elephant, although not born in captivity, was captured when very young. He was of extraordinary size, and his whole bony system was unusually massive. He had always been of a peaceful disposition, and had not, until his death, met with any serious accident.

A duplicate cast of the jaw was sent to Professor W. H. Flower, director of the Natural History Department of the British Museum, author of "The Osteology of the Mammalia," etc., and perhaps as competent authority as now lives upon the subject. He gave his opinion in a letter, in the course of which he says:—

"The irregularity has arisen, evidently from his food not having sufficient gritty particles in it to cause the required and normal wear of the front ones, so that these were not gotten rid of, as they ought to have been, before the others came up to take their places. Elephants in menageries constantly suffer in this way. They ought to have a little sand mixed with their food."

Notwithstanding the eminence of the authority, I am inclined to take issue with Professor Flower upon the etiology of this case. I would not assert that the lack of attrition was not a factor in the result, but I cannot

believe that alone it is sufficient to account for the aberration, for the following reasons:

First. It is not absolutely certain that the procession of the teeth in Elephas is entirely due to their wear. That probably has something to do with it; but if the animal was entirely fed on food that produced no abrasion of their surfaces, it seems to me there can be no doubt they would be shed. Probably the time might be deferred, but the posterior molars would certainly develop, and to do this the anterior ones must be removed. We know that in the human subject the deciduous teeth are removed with the development of their successors, and that when there are no permanent germs the first ones are usually retained. This would indicate that the absorption of the deciduous roots is due to the development of their successors.

Second. With the wearing away of their crowns there is a development of the roots of the worn teeth in elephants, so that their removal does not depend upon mere attrition,—that, indeed, inducing exactly the contrary tendency. They are absorbed, as are the deciduous teeth in other mammals. It is a part of the mysterious process of nature, influenced by the pressure of the succeeding tooth. That in elephants the eruption and advance are horizontal instead of vertical, does not necessarily change the conditions. Lateral pressure is as effective in inducing resorption as is vertical.

Third. I cannot conceive that the lack of wear of the teeth should affect the structure of their successors. Their form might possibly be changed, as the result of undue pressure upon the formative plates; but this would naturally result in their being crowded together, whereas in the teeth of "Jumbo" the plates are separated by an undue amount of cementum.

Fourth. The relative proportion of the different tissues is completely changed in this case, thus showing that the development within the crypt of the jaw in the early stages was interfered with. Even though the preceding tooth was not advanced it would not induce this aberration, because the anterior plates are formed before the normal time for the advance of its predecessor has arrived.

Fifth. The fourth molars, in the case of "Jumbo," seem to have been considerably worn. The fifth molars are occupying a place anterior to that which belongs to them. They have, it seems to me, unduly advanced. The general appearance is that of teeth that have irregularly developed. It is quite impossible to determine the structure of the posterior plates without making a section of the jaw, as they are yet enveloped in the bone.

Sixth. It is difficult to conceive of food that would cause greater attrition than that which is usually supplied to elephants in captivity. In

their native condition they subsist largely upon succulent grasses and shrubs, which in their green state are easily masticated. In captivity elephants are mainly fed upon dry hay, than which few foods could wear the teeth faster, and desiccated grains, the siliceous covering of which must cause great wasting of the tissues of the teeth. It would appear, then, that the amount of attrition in the teeth of a captive elephant should be much greater than in those of one which lives in a state of nature.

Seventh. The irregularity appears only in the superior teeth, those of the lower jaw being normal, or nearly so. It is not conceivable that so great an abnormality, due to a cause that is general, should affect only the teeth of one jaw. The lack of wear would be indicated in the lower as much as in the upper teeth, and should produce the same general results. The actual condition shows that whatever was the cause it affected but one jaw, and therefore could not have been a general one, but must have been local.

In view of these facts, it does not seem to me reasonable to suppose that this abnormality could be caused by lack of gravel in the food of "Jumbo." I should rather attribute it to some local injury which he had sustained, and which interfered with the development of the tooth-plates of the upper jaw. It might be sufficient to accomplish that without being externally visible. The reversed convexity of the teeth, the change in their morphology, the abnormal development of the alveolus, the mal-arrangement of the tissues, the distortion in the tooth-plates, with the fact that but one jaw was affected, all seem to point to this as the predisposing cause. It is possible that the jaw itself is but partially developed. It seems short for an animal of such extraordinary size.

Nothing but an examination of the forming plates, and of the germs of the remaining teeth, will satisfactorily solve this very interesting problem, and it is very much to be hoped that some competent New York comparative dental anatomist will receive the necessary permission, and make a careful study of this unique case. The skeleton will be found in the rooms referred to, at the right in the main entrance hall.

It is very probable that if the jaws and teeth of our domestic animals were carefully examined, many abnormalities, as well as pathological conditions, might be found. The teeth of the horse are especially liable to derangements. By careful breeding, certain species of dogs have been developed, whose principal distinguishing characteristics lie in the jaws and teeth. In the bull dog, the projecting lower jaw is a distinct departure from the type of the canine. The same may be said of the pug. There is a wide field here for careful observation and study. Very little has yet been done in comparative dental anatomy, but the subject is beginning to attract the attention which its importance demands.

ANCHORAGE OF GOLD FILLINGS.

BY S. B. PALMER, M. D. S., SYRACUSE, N. Y.

Read at the Twenty-fourth Annual Union Dental Convention of the Sixth, Seventh and Eighth District
Dental Societies of the State of New York, held at Binghamton,
October 25th, 26th and 27th, 1892.

In rearing structures of importance, whether bridge or building, a good foundation should be the first consideration. This principle applies as well to the foundation of fillings in teeth, which rest upon dentine as different in structure and durability as rock and sand. It is customary to speak of this subject as anchorage, while foundations would better express the conditions. The architect's ideal foundation is "solid rock," yet he must contend with all the intermediate grades to "sinking sand."

To obtain good results from filling, it is as important that the structure and condition of the dentine be understood, as how to insert a gold filling. There must be harmony between the two or failure will be the result. At least three conditions are necessary to produce permanent gold fillings: normal dentine, accessible cavities, and good manipulation.

No. 1.—The ideal filling is one of cohesive gold throughout, well contoured and anchored in firm tooth structure. These happy combinations are not always present, and the requirements must be met by combinations of other preparations. It is true that a few skillful operators claim to accomplish all that is required with cohesive gold alone. Allowing this claim, there is a waste of energy for the operator and needless strain upon the patient, without corresponding benefits. One thing should not be lost sight of: that it is a fixed law in nature that a metal filling in the mouth exerts an electro-potential influence to decompose the fluids that may be between the filling and the walls of the cavity, or in the dentine itself, when that is much below normal density. This decomposition is according to the conductivity of the plug and its powers to resist oxydation. Thus, gold being the best conductor and free from oxydation, it acts with greater persistency than tin or amalgam. Let no one be deceived, and make a mistake in trying to circumvent this law by perfect manipulation, without a cavity lining which will exclude moisture. Although cavity lining is not anchorage, it has much to do in laying the foundation for fillings. Your attention is called to a few specific cavities and conditions of dentine, with recommendations for treatment in starting fillings:

First. Assuming that an accessible cavity is properly prepared in dentine of normal structure, with undercuts or angles so that the first piece of gold inserted is held firmly, upon which every other piece is made to cohere until the plug is completed, no finer filling can be pro-

duced, in appearance, or for tooth preservation, and thus credit is given to all who can do this superior work.

Care should be taken not to drill deep anchor pits into the vital dentine, as formerly practiced. Much harm has been done by or through the thermal changes thus introduced.

No. 2.—Foundations of soft gold for cohesive plugs.

A large proportion of gold fillings are made in this manner, and probably each operator has a method which suits him well. The one which best answers my purpose is to commence with one or more cylinders. Without describing the kind of cylinder recommended, we might as well say pellets. There is nothing in the market that answers the purpose, and we may better give a description how to make cylinders now, than later on.

Ney's No. 4 foil is best adapted for cylinders, on account of the roughness imparted to it by the book paper under pressure. Smooth foil makes cylinders too hard. The leaf may be cut into half, third or one-fourth strips, the ribbons folded to a width according to the depth of the cavity. Cylinders should be kept on hand and the selection made as required. The narrow strips are rolled around a broach, or better, a three-sided point attached to a firm handle. When the roll is drawn from the point, the ends should be slightly pressed with the pliers.

Let us now consider a cavity located in the grinding surface of molars, medium or large, surrounded by firm enamel borders, the bottom of the cavity flat or concave, as the case may be on the removal of the decalcified dentine. If the dentine is firm and dense, the cavity is ready for the gold. When soft and sensitive, yet firm enough to warrant filling, varnish the cavity with some quick drying varnish. I am using Canada balsam cut in chloroform. Without waiting for the varnish to harden, line the bottom of the cavity with a piece of gold foil of two or three thicknesses. Upon this lining place a cylinder which will about fill the orifice of the cavity; if too large, compress it. The length of the cylinder may be one-half or two-thirds the depth of the cavity. Then commence with cohesive gold. Every piece introduced remains firm and is driven into the folds of the cylinder, condensing and expanding laterally every portion of the plug at the base, giving lateral pressure against the walls of the cavity, and the anchorage is perfect.

Condition No. 3.—Approximate cavities in molars or bicuspsids, extending from the cervical border to the grinding surface.

Fillings contoured. Matrices well adapted to this class of work are made of rolled aluminum, wide enough to extend from the gums to one-half the length of the crown, and beveled to a knife edge. Insert a matrix of suitable thickness and bend the ends away from the tooth, thus giving full view and access to the cavity. The matrix is used only to pre-

vent the first pieces of gold from falling out, and not to mould the filling. The cavity being in readiness, the portion next to the gums only should be varnished, as any like coating on the enamel, or even the dentine, prevents the mechanical bite which gold has without an enamel varnish.

Select a cylinder smaller than the cavity, but longer than its depth. Carry one end of the cylinder into the cavity, and force the outer end towards the gums upon the incline made by the knife-edge matrix. When the cylinder has been firmly pressed to the cervical border of the cavity, another cylinder may be placed by its side, or one on either side, and packed as before. Thus a firm and broad foundation is laid upon which cohesive gold may be packed to finish. When done, one end of the alluminum is bent straight, and the piece drawn out laterally. When the projecting ends of the cylinders are condensed and the plug finished, no portion of the filling will be more perfect than that at the cervical border.

Condition No. 4.—Same as the last described, except that the cavity extends beneath the gums. A case in practice will be sufficient.

A patient, while absent, had occasion to have a bicuspid filled. The cavity extended beneath the gums. The dam was applied and two unsuccessful attempts made to fill with gold. The patient returned with a phosphate filling. Examination showed it useless to apply the rubber. The cavity was prepared and filled with amalgam to the cervical border, and the remainder with gutta-percha, and the patient dismissed. At the next sitting, the amalgam was cut down for a fastener, the rubber applied and the tooth filled with gold. One year's time shows no discoloration from the amalgam.

No. 5.—Cavities upon buccal or labial surfaces, extending beneath the gums, so as to make it difficult to apply the rubber, especially the shallow crescent-shaped cavities in centrals and laterals. Prepare the cavity with no more depth than is necessary to remove softened dentine. Let the margin be distinct and the walls at right angles with the bottom of the cavity. Protect the teeth with napkin or paper, and fill with bibulous paper between the teeth on either side of the cavity. Dry the cavity and exposed gums thoroughly, and varnish both cavity and gums, allowing the varnish to pass beneath the gums where there is space, which will prevent moisture from capillary attraction. Line the cavity with crystal gold. First go around the border of the cavity, then build across until the cavity is lined with a basket of gold. Upon this foundation may be anchored a solid gold plug of any cohesive gold, without danger of falling out or decay around it.

This method is the same as that given by Dr. Howard in a clinic at Rochester, and it more than meets his claims in filling the porous dentine, whereby fluids are excluded and secondary decay prevented. With a little practice, filling this class of cavities is made easy.

Modification and adaptation of the principles here laid down will meet all conditions of anchorage for gold fillings, nor is the preparation of foundations less valuable for amalgam, gutta-percha, or phosphate fillings. The indications for use of varnish under oxy-phosphate, are sensitive dentine or near approach to the pulp. No acid excitement is experienced with this cavity lining.

Under gutta-percha it is valuable in fastening the filling to the walls of the cavity, in conditions unfavorable for the exclusion of moisture, as each piece of filling remains fixed in the cavity. It is true that chloro-percha, and some of the essential oils also, cause the filling to adhere, but the lining is much softer and yielding than varnish. In connection with amalgam it may be used as with gold, as a lining for cavities where poorly calcified dentine must remain as the pulp covering; also in cases where dependence is placed upon oxydation to fill the dentine. So far as I can determine, this answers the same purpose, with much better appearance. Amalgam fillings inserted in heavy varnish remain bright upon the surface in contact with the cavity walls, which is not the case in any amalgam touching dentine.

Again, where there is no action upon the metal there is none upon the dentine; thus amalgam which contains no copper may be used with equally good results, without discoloring the teeth.

In conclusion, science teaches that the result of every operation in filling is the outcome of principles laid in the foundation and observed to completion. Whatever is success at any time will be for all time, under the same circumstances and conditions.

Progress is based upon the knowledge and application of principles leading to better methods. Thus we are stimulated to search for more knowledge and higher attainments.

THE ADVANTAGES OF NITRATE OF SILVER IN DENTAL PRACTICE.

BY A. M. HOLMES, D. D. S.

Read at the Twenty-Fourth Annual Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, October 25, 26 and 27, 1892.

When I received the request from the President of the Sixth District Dental Society to read a paper at this meeting, I hesitated, and was at a loss to know what to contribute that had not been written and talked over and over in society meetings; still, duty required that I should respond, and I decided to give something of my personal experience in the use of

nitrate of silver in the treatment of diseases of the teeth, with the hope that, although it had but recently been up for discussion in dental societies, by reason of the able papers of Dr. Stebbins, the subject had not become threadbare, and that you would find something of interest in its consideration. The character and scope of the discussions that I have read on the use of this remedy for the treatment of diseased teeth, have been such as to impress me with the belief that its benefits are not generally understood and appreciated.

Nitrate of silver is conceded to rank as one of the most efficient and reliable remedies in medicine and surgery, and when its merits are fully known it is believed that it will be found equally efficient in the treatment of a large class of diseases of teeth. Take for instance decay in temporary teeth; we all know from individual experience how trying it often is to fill the teeth of small children, in the ordinary way of making such operations; how they resist all efforts to excavate and fill sensitive cavities. By the use of nitrate of silver these operations are more easily made.

In approximal cavities in the posterior teeth, where the child is not too nervous and timid, cut away the walls to a V-shape, prepare a piece of gutta-percha of the proper size to fill the space, soften it by heat, and cover the parts that are to come in contact with the diseased surfaces with powdered crystals of nitrate of silver, and carry it to the place in the tooth or teeth prepared for its reception, packing it firmly, and leaving it there to be worn away by use in mastication. When that takes place, the surfaces of the teeth treated will be found black and hard, with no sensitiveness to the touch, or to change of temperature, and they will remain so indefinitely. In case the child is so timid and fearful as to prevent this course, dry the cavity, take out such softened dentine as the patient will permit, carry the crystals on softened gutta-percha into the cavity, and pack it, leaving it to the time when it is desired to replace it with a more thorough operation. On removal of this filling, the dentine will usually be found hard, without sensitiveness, and needing but little excavation for the final filling.

I have treated diseased pulps with nitrate of silver crystals very frequently, since early in my practice, especially in temporary teeth, where devitalizing pulps with arsenious acid is unsafe, applying the crystals direct to the exposed pulp, usually with relief to the patient.

Nitrate of silver is a resolute remedy; it cauterizes the surfaces of the soft tissues to which it is applied, but does not penetrate them as does carbolic acid, nor does it involve the entire pulp in an inflammatory condition, tending to destroy the whole mass, as does arsenious acid.

In cases of extreme sensitiveness about the necks of the teeth at the margins of the gums, where the tendency is to softening of the tissues of

the tooth, a condition very annoying to the patient and troublesome to the dentist, nitrate of silver has proved more successful with me than any other remedy, in checking the progress of the disease and relieving the patient. The salt may be applied directly to the sensitive part without pain to the patient. A good method that I have practiced, is to cover the parts after the nitrate is applied with a phosphate filling material of a cream-like consistency. That hardens and prevents the washing away of the remedy, and the surrounding parts from coming in contact with the salt.

Erosion, or wasting of the teeth, is checked by nitrate of silver more perfectly than by any other remedy that I have ever used. The salt is applied to the affected parts, and covered with a phosphate filling to protect and retain it in place until it is firmly established in the dentine. In cases where the progress of the disease has gone so far as to require restoration by filling, this preliminary treatment is very beneficial in preventing a further waste of the tooth substance, and consequent failure of the operation.

In cases of superficial decay in soft teeth, where dark surfaces are not objectionable, nitrate of silver is very beneficial. By removing the softened portion of the tooth, polishing the surface and rubbing the salt into the dentine, using a warm burnisher, and varnishing the parts to protect them and to hold the remedy until it is taken into the organic matter of the tooth, there will succeed a dense, hard surface, free from sensitiveness in mastication or change of temperature. In filling cavities in the class of teeth having an excess of organic matter, with which there is so much trouble from chemical or electro-chemical action between the walls of the cavity and the filling, an application of nitrate of silver will effectively prevent these unfavorable results. The remedy is taken up by the dentine, penetrating the surface sufficiently to prevent any such action between filling and tooth.

This treatment will at times result in a darkish hue to the walls of the cavity about the filling. This I explain to patients, that they may know that it results from the treatment, and that it is a proper and favorable condition for permanency of the operation. In crowns and bridges, where the dentine is uncovered, it is beneficial to use this remedy on the teeth and roots used to sustain the bridge or crown, as a protection against thermal change, and decay. The use of nitrate of silver may be varied by applying the rubber dam, using a strong solution of the salt, and evaporating the moisture by use of a hot air syringe. When used in this way, a solution of soda can be applied to the parts to neutralize any acid remaining. In the class of cavities extending so far beneath the soft tissues as to render the use of the rubber dam or matrix impracticable, and a leakage from the surrounding tissues is liable to enter the cavity while introducing the filling and injure the permanency of the operation,

cauterizing these tissues thoroughly with nitrate of silver will effectually prevent such a result.

After treatment of diseased pockets, and removal of the deposits from the roots of teeth, nitrate of silver has proved more successful in restoring a healthy condition of the parts than any other remedy that I have used in the treatment of pyorrhœa. The finely pulverized crystals may be applied by a small spatula of wood or platinum, slightly dampening the end of the instrument and applying it to the salt. The crystals will adhere sufficiently to be easily placed in the space between the gum and the roots of the teeth. After the remedy has been left for a few moments in contact with the parts, it may be washed away with water, by the use of a syringe.

In cases of the extirpation of pulps, where the canal is sensitive at or near the apex of the root, nitrate of silver crystals carried to the sensitive part and left there for a few hours usually relieve the trouble, and the canal can be filled without pain or danger of unfavorable results.

These are some of the many cases in which nitrate of silver crystals are advantageous in dental practice. I will not detain you longer, for it was not the purpose of this paper to cover the entire field of this remedy. It is a powerful agent. It acts promptly, with great uniformity, and leaves its track in darkened surfaces when applied to the teeth. This should be considered, and its employment governed accordingly.

COPPER AMALGAM, PLUS STANDARD ALLOY.

BY W. W. COON, D. D. S., ALFRED CENTRE, N. Y.

Read at the Twenty-fourth Annual Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held in Binghamton, October 25th, 26th and 27th, 1892.

The many and almost universally dissentient writings about copper amalgam, indicate that the majority of those who ever did use it have now discarded it, and by the time they finish repairing the last copper filling that has "cupped," their vocabulary will have to be enlarged, or they will be unable fully to express themselves concerning this material. A few writers have I noted who hold out hope for a permanent usefulness of copper amalgam. Dr. J. Allen Osmun, in an article entitled "Some Observations on the Use of Copper Amalgam," (published in the July, 1892, issue of *The International Dental Journal*) says: "If copper amalgam fillings be worked as I am endeavoring to demonstrate, heating many times, with thorough rubbing, clearing them of all excess of mercury, they will stand the test in every way, and become a thing of beauty and a joy forever." Certainly this would be the plastic desid-

eratum for many posterior cavities. Personal experience, however, makes me skeptical regarding so broad an assertion. Dr. Osmun's idea is that by thus working the material the copper is tempered, and there being no excess of mercury the filling will stand. While I believe that this care in the manipulation of copper amalgam makes the filling better, I do not apprehend that any perfection in the matter of manipulation or manufacture will produce, with pure copper and mercury alone, a filling that will not possess surface-disintegrating possibilities.

To offset Dr. Osmun's opinion we have that of Dr. W. B. Ames, as expressed in a paper which appears in the May, 1891, number of *The Dental Cosmos*, entitled "Why Copper Amalgam Wastes in the Mouth." He says: "That heating, and especially repeated heating, is injurious to copper amalgam where the very best results are required is unquestionable, as the 250° F. that is required to break up the crystals and set mercury free, is sufficient to volatilize the mercury to a very appreciable extent, as can be seen by holding a piece of gold over the amalgam during the process. While I do not consider careful heating to be as injurious as the extensive trituration that has been so generally advised, I think it is well to use only fresh amalgam in such cases, as we have reason to fear that otherwise wasting might take place."

In the discussion of the paper from which the foregoing quotation is taken, appears the opinion of Dr. L. E. Custer, expressed as follows: "Perfectly amalgamated fillings, with no excess of mercury and properly manipulated, may be used in all positions and conditions of saliva, and be free from waste." I regard these opinions as erroneous and delusory, in so far as they express confidence in the continuous stability of pure copper and mercury fillings, however manipulated.

Dr. J. E. Register, in the last issue (October, 1892) of *The International Dental Journal*, has, under the title of "Gold Added to Copper Alloy," made public a suggestion which was made to him by Dr. H. C. Register, that perhaps may prove valuable. Here let me deprecate the use of the word "alloy" in reference to copper amalgam, (i. e., pure copper and mercury). In Attfield's General, Medical and Pharmaceutical Chemistry, page 192, is found the following: "The compound formed in fusing metals together is usually termed an alloy, but if mercury is a constituent, an amalgam." Therefore, the term alloy may only be rightly used for a combination of metals not embracing mercury as a component. The suggestion was that a sheet of No. 4 soft gold foil be dissolved in an ounce of mercury, and after making the ordinary copper amalgam plastic by heating and trituration, all the mercury possible squeezed from it, and it again trituated with the addition of mercury prepared as above stated. The first half of the cavity is to be filled with the material ordinarily plastic, but the last half used is squeezed very dry.

I have used copper amalgam several years, and have had the experience common to all who have made occasional use of it since its debut in 1887. Within a year's time only have I used it in a way to give it a fair chance to do its best for carious molars. Had I read Dr. W. H. Truman's paper, entitled "Copper Amalgam, its Virtues and its Vices," which he presented to the Pennsylvania Association of Dental Surgeons, April 8th, 1890, at the time of its publication instead of waiting until last week, when it attracted my attention as I was looking through the journals on this subject, I probably would not have commenced what is now my common practice, viz.: making the surface of copper amalgam fillings invulnerable by a coating of high grade alloy, which protects the underlying amalgam from electro-chemical dissolution.

Dr. W. H. Truman said: "If the two amalgams (i. e., copper amalgam and an alloy amalgam) are inserted in a cavity at the same time, the alloy amalgam will not harden." Continuing, he said: "This has been questioned. It requires but a single experiment to settle the matter beyond all cavil." This settlement was substantiated by Dr. Chupein, who said in his discussion of the matter that he had once used it (i. e., copper amalgam) as a foundation for a filling, and then he found it, as well as the other amalgam which he had used over it, so granular that he removed the whole filling, and refilled with copper amalgam alone.

I must beg pardon of these gentlemen for not knowing that the matter had been settled this way. After repairing my first "cupped" copper filling, I commenced finishing copper amalgam fillings with Standard Alloy, (for a knowledge of which material I am indebted to Dr. G. P. Rishel) and I am not credulous enough to believe that my ignorance of the way the matter had been settled once for all by Dr. Truman is sufficient to account for the success attained by this method. The fillings harden very promptly, and present an enduring surface, which allows the underlying copper amalgam to fulfill its extreme usefulness in maintaining the most perfect adaptation to cavity walls of any known amalgam.

The method is simple. The cavity is prepared as for copper amalgam alone. Copper amalgam is prepared for use in the usual way, care being taken to have no excess of mercury. The cavity is filled with it, to completion if you please, then a shallow portion of its entire surface is removed, wiped away with a pellet of cotton, spunk, or other means, and sufficient of Standard Alloy (Eckfeldt & DuBois's) is amalgamated and added to the filling to complete it. This becomes perfectly united with the copper amalgam, and will not separate. The manipulation of Standard Alloy differs from that of copper amalgam. With the latter, ball burnishers are used with a rotary motion; with Standard Alloy, flat end instruments are used with a tapping motion, which secures the coating of alloy in place.

This alloy has a very fine grain, and the finished plug presents a surface that is capable of a high polish. If no pieces of copper amalgam have been allowed to get mixed with the amalgamated alloy that is added to the copper, it keeps a good color.

This puts to its fullest usefulness a material which is almost universally conceded to be at once the best and most unreliable preserver for posterior cavities indicating the use of an amalgam. Best, because of its steadfast adaptations; most unreliable, because of its surface-disintegrating possibilities when used alone.

FAILURE IN CROWN WORK.

BY H. B. MEADE, D. D. S., BUFFALO, N. Y.

Many articles have been written concerning the failures made in banding roots for crown work, and many dentists have abandoned the use of collars or bands entirely, because a few cases have come under their observation in which a band was poorly adjusted, there being a V-shaped space between the band and root, the parts being in a highly inflamed condition. If bands are to be fitted in this manner, it would be better to discontinue the use of them at once, but with the exercise of intelligent care, no such space is necessary.

We must bear in mind that we are dealing with one of the most delicate tissues of the human anatomy, when we extend a band so far up the root that it interferes with the peridental membrane. If we take into consideration the anatomical form of any of the anterior roots, after the crown has been excised and ground down to the gum line, and then imagine the fitting of a band to nothing more or less than a cone, commencing at its base, we will at once see how the V-shaped space is produced, as the band must necessarily be as large as the end of root, that it may be driven on.

To overcome the V-shaped space, and have the parts remain in a healthy condition, the band must not be driven on a root that has had no other preparation than merely the crown excised and ground down to the gum-margin. The remaining portion of the enamel that lies under the free margin of the gum must be removed, care being taken so to shape the root that its sides will be parallel, and the band must not extend further than the free margin of the gum. A band adjusted in this manner (using pure gold) will cause no inflammation. The end of the root should be ground concave from labial to palatal surfaces, giving it the same curvature as the gum line. This will make the fitting of the porcelain crown to the band an easy matter.

UNION DENTAL MEETING OF THE SIXTH, SEVENTH
AND EIGHTH DISTRICT DENTAL SOCIETIES OF
THE STATE OF NEW YORK, HELD IN BING-
HAMTON, OCTOBER 25, 26 AND 27, 1892.

The District Dental Societies of Western New York have long been accustomed to hold their semi-annual meetings together, each in turn acting as the host for the occasion. Until within two years, the combination has included the four western districts of the State, the meetings being held alternately in Buffalo, Rochester, Syracuse and Binghamton, but lately the Fifth District Society has declined to join in the arrangement, greatly to the regret of the other Districts.

The twenty-fourth semi-annual meeting of the Sixth, Seventh and Eighth District Societies, was held in the Sixth District, and it was quite as pleasant and profitable as any that have preceded it. Indeed, some of its features were a step in advance of any of the former years. The papers were excellent, and the discussions full of interest. In its social features the meeting was a pronounced success, the annual dinner being especially enjoyable. Dr. F. B. Darby acted as toast-master, and his capabilities in this line are beyond computation. There were representatives of the principal professions and avocations, and Law, Medicine, Divinity and the Press, had eloquent spokesmen present. Indeed, the most of the speaking was by men who were not dentists. The dinner itself was served at the Hotel Bennett. The menu was long and liberal, and the several courses were admirably served. Few of the hotels of the different cities in which the meetings have been held, have sent their guests away so entirely satisfied with their entertainment as did the Hotel Bennett on this occasion.

The clinics were not as numerous as they have been on some occasions, and as a whole were not of so great interest. Yet some of them attracted much attention, and perhaps these were more profitable than they would have been in the presence of other as great attractions. Some of the clinicians failed to show up at all, and some were without patients upon whom they might operate.

The Convention met on Tuesday, October 25th, Dr. C. W. McCall, of Binghamton, President of the Sixth District Society, in the chair, with Dr. T. B. Fuller, of the same place, as Secretary. An address of welcome was made by Dr. McCall, and this was responded to on the part of the visiting dentists by Dr. W. C. Hayes, the President of the Eighth District Society. Dr. Hayes spoke of the great advantages of these society meetings, and of the desirability of cultivating the society feeling. He gave a brief history of the organization of the State Society, and of

the Western District Societies, reviewing the benefits which had been derived from them, and the influence which they had exerted upon both dentist and patient.

The minutes of the last annual convention were read and corrected, and some other routine business was transacted, after which a paper was read by Dr. H. J. Burkhart, of Batavia, on "Dental Education."

[It was impossible to publish all the good papers in this number, and those of Drs. Burkhart, Downs and Jewell are held over until the next issue.—EDITOR.]

EVENING SESSION.

A paper was read by Dr. S. B. Palmer, of Syracuse, entitled—

ANCHORAGE OF GOLD FILLINGS.

[This paper is published in this number in full, commencing on page 18.]

The discussion was opened by Dr. A. M. Holmes, of Morrisville, who said that his experience with Canada balsam, cut in chloroform, for lining cavities in teeth, was long and satisfactory. He described his method of preparing and employing it. He had found that when cavities were painted with this preparation, it not only served as a retainer, but the chloroform evaporating, there was left a hard, impervious coating between the filling and the tooth, which effectually closed the mouths of the dentinal tubuli, and formed a non-conductive layer that very materially modified shocks from thermal changes. In preparing it, he simply evaporates the balsam to the point of dryness, and then dissolves it in enough of chloroform to reduce it to the proper consistency. He does not intend to allow the Canada balsam solution to coat the cavity quite to the edges of the walls.

In the use of gutta-percha, he has found this solution extremely useful. After coating the interior of the cavity with it, he inserts the gutta-percha immediately, before the chloroform has entirely evaporated. There is then a slight union of the two, and the filling is effectually held in position. In finishing gutta-percha fillings, he uses a piece of tape moistened in chloroform. This will cut away the surface of the material very readily, and without danger of disturbing it, or of cutting too deep, while the surface is left more smooth and even than if finished in any other way.

He is a great advocate for the use of different preparations of gold. While one might be extremely well adapted to one condition, it might utterly fail under other circumstances. When the walls of a cavity are firm and strong, and there is no lost contour to restore, he uses soft foil

almost exclusively, because he can better adapt it to every irregularity. But when there is lost contour, or when the walls are broken away, it does not answer the purpose. When the anchorage is difficult and must be mainly at the cervical portion of the cavity, he uses Williams' crystal gold to begin with, and finishes with cohesive foil. Soft foil can be inserted faster than cohesive, and it will not leak, but it does not have the strength and tenacity of some other preparations. The only way is for the dentist to make himself familiar with the different preparations, and then to use his best judgment, and the results of all his experience in selecting that which will best answer the purposes sought.

Dr. C. W. STANTON said that he once heard a dentist relate a case in which a contour filling that had been inserted came out. He dried out the cavity, mixed a little oxy-phosphate of zinc to a thin consistency, and stuck the filling in with it. The speaker had since tried the same expedient in a good many cases, and had been successful in thus making the fillings stay in. The oxy-phosphate holds the filling in place, while the gold protects that from being worn away, or being dissolved out in the mouth.

Dr. PALMER said that he had not only used the oxy-phosphate for retaining gold fillings, but for amalgam as well. He has replaced a large number of fillings in this way, and they remained firm, and lasted as well as if they had never come out.

Dr. F. B. DARBY related an instance in which he had attempted the same thing with a gold filling that came out, and met with a most complete failure. The oxy-phosphate did not retain the filling securely. It was a cavity like some of those for which this method had been recommended—that is, without undercut or retaining points. He believed that it was as essential that the cavity be of a generally retentive shape for this kind of work, as for any other. Probably when a filling came out of a cavity because it was not adapted to the walls, they being of a fairly retentive form, oxy-phosphate might successfully be used in holding it in again, but he did not much believe in the use of any kind of salve to stick a filling in a cavity that was improperly shaped.

Dr. PALMER said that in re-setting fillings by means of oxy-phosphate, all parts of it should be made bright and clean; then the oxy-phosphate should be mixed very thin. Some of it should be placed on the metal, and some in the cavity, which should also be made clean and dry.

Dr. M. D. JEWELL thought a great deal of judgment necessary to success in practice of this kind. He remembered that in college, a number of years ago, a student attempted to stick his refractory gold in a cavity by means of sandarac varnish, and was ridiculed by the other students for not having any better way of holding it in place. Now, men of

experience, and knowledge, and standing in the profession, are trying to do the same thing.

Dr F. H. LEE said that he had met with good success in anchoring crystal gold with oxy-phosphate.

Dr. DARBY always felt a little sad when men whom he had learned to respect and hold in professional esteem, recommended such practice as to use sticking-plasters to hold their fillings in place. It is not good mechanics, it is not good sense, and he did not believe it to be good practice. Old practitioners should use great care in advocating such things, in place of the more reasonable practice of making the cavities of a retentive form, and then thoroughly consolidating the material into them. We are led into bad practice by these means. Some years ago there was a craze for copper amalgam. Some of us were a little doubtful concerning it, until Dr. Miller pronounced in favor of it, and then we thought we were entirely safe in following in the footsteps of so eminent a man. Now we can see that scarcely anything has done so much harm in dental practice as copper amalgam. A great many teeth and some dentists have been ruined by it.*

Our young men are always looking for some patent method of easy practice, and some of our older practitioners keep their eyes peeled for short cuts to excellence. There is only one road to real success, and that is patient, pains-taking effort. There are more patent suckers for holding artificial plates in the mouth than a man can reckon up without taking a great deal of time to it, but who ever heard of a reputation for good work being won by means of them? If a plate is without adaptation, all the gimcrack stickers that were ever peddled out by men too lazy to earn a reputable living will not make it what it should be, and it is the same with fillings.

Dr. PALMER said that he thought he had been misunderstood. His point was that by the use of balsam to line a cavity, the dentine was protected from thermal shocks, and from electro-chemical action. It also served to protect the cavity from the entrance of moisture.

Dr. C. S. BUTLER does not think it good practice to use Canada balsam for the purpose of starting a filling; is afraid that if it be recommended, dentists may use it too freely for the purpose of saving time. Copper amalgam came into general use through the journals reporting that men like Miller recommended it.

* Dr. Miller gave the results of a series of experiments out of the mouth with copper amalgam, and declared that it possessed antiseptic properties, and that from this point of view it should make a good tooth saver. He never pronounced upon its other qualities, so far as we know, and never recommended its general use. — [EDITOR.]

A paper was read by Dr. W. W. Coon, entitled "Copper Amalgam, Plus Standard Alloy."

[This paper is published in this number in full, commencing on page 24.]

The discussion was opened by Dr. S. B. Palmer, who said that in such a combination filling of copper amalgam and alloy, if the copper does not come to the surface at all it will prove satisfactory. The fact that there are positive and negative elements in copper amalgam, is why its integrity cannot be depended upon. The copper is wasted and the mercury comes to the surface. If the surface of a copper amalgam filling remains bright, it is an indication that an electro-chemical action is going on which will disintegrate the filling. When it is found that such a filling is wasting away, its surface may be burred away and ordinary alloy may be placed over it, and this will stop the electro-chemical disintegration and save the filling.

Dr. H. H. BOSWELL said that his experience with copper amalgam had not been as unfavorable as that of many. It is true that in some cases there was a wasting of it, but there was a great difference in the preparation. He had been using some made by Dr. Buck, and it had stood the test of time as well as any amalgam.

Dr. McGEORGE said that he had used Buck's copper amalgam, and he had found it the worst thing of the kind he had ever put in the mouth. It was utterly unreliable in his hands.

WEDNESDAY MORNING.

A considerable portion of the session was taken up by clinical demonstrations, which mainly took the form of oral descriptions and blackboard illustrations. Dr. W. M. Sharpe, of Binghamton, described and illustrated a method of making porcelain inlays. A series of excellent charts and drawings helped to make the subject plain.

Dr. F. W. Low presented chloride of methyl as an obtundant. Its effects are produced through the reduction of temperature. He illustrated this by directing a jet upon a test-tube filled with water, which was reduced to ice in a very short time. There is usually very little or no shock to the tooth from its use. Its effects are almost instantaneous. A single second's application of the jet is sufficient to obtund for some minutes. The odor of the vapor is disagreeable, and that is one of its greatest drawbacks. The apparatus used is furnished by McKesson & Robbins, of New York, and the price is twenty dollars. When the small cylinder is empty it may be refilled for five dollars.

Dr. H. H. BOSWELL explained his method of extirpating pulps. As no patient was provided he could not demonstrate it. He said that after freely exposing the pulp, he applies carbolic acid until all sensation is overcome. Then by careful manipulation he introduces a broach, and in a minute or a minute and a half he is enabled to remove the whole pulp painlessly.

He was asked if he used this method in removing all pulps, whether recently or long exposed. His answer was that it was mainly applicable to pulps which were traumatically injured, and which it was desirable to remove at once. If there had been much of inflammation and pain it might be necessary to use some other means.

Dr. C. S. BUTLER described a method of retaining fillings in distal cavities of posterior teeth by means of a small plate.

Dr. C. W. STANTON exhibited a method of anchoring gold fillings by means of oxy-phosphate of zinc. The cement is allowed to get partially hardened to the point at which it is sticky, when the gold or amalgam is inserted.

Dr. G. W. MELOTTE exhibited and described some new methods in crown and bridge work. He said that Dr. Byng, of Paris, first exhibited to him a method of uniting the ends of bands without the use of solder. Coin gold was used, and the ends were dressed down thin with a file, when they were lapped, brought into perfect coaptation, with a little creamy borax between them, and were held in the flame until they were upon the point of fusion, when they united perfectly without sign of any seam. If after a band has been fitted it be held by the pliers in the flame until it has been raised to a red heat, all the spring will be taken out of the gold, and it will retain its exact form. For the past year he has been using this method, producing seamless bands. Such an one is easily stretched if necessary, and there is no hard unyielding point in the band where the union is.

If a molar tooth has no antagonist, it needs no grinding down of the cusps. In fitting to it, a seamless band should be continued up under the edge of the gum, the lower edge coming below the cusps. Fill this space with plaster of paris, and when it is set remove the band and the plaster of paris together. Now take a piece of fusible metal that melts at 150° F., and with the blow-pipe melt it into the band and the plaster impression. If the plaster be now removed, there is an exact reproduction of the cusps of the tooth in their proper relation to the band. The edges of the band which project above the fusible metal should now be trimmed, and filed, and burnished down over the fusible metal, until it is smooth.

An impression should now be taken of the prepared end, and dies and

counter-dies made of fusible metal which melts at 212° F., for swages. In boiling water melt out the 150° fusible metal, being careful to see that no remnants are left. A piece of gold is struck up between the 212° fusible metal swages, and this is soldered on, and the crown is completed.

Before putting the plaster in the top of the band, while it is on the tooth, it is well to flow a little melted wax over the top of the tooth if it be rough, so that it will separate easily.

In taking impressions for bridge work, it is sometimes extremely difficult to get the plaster out without comminuting it. Plaster of paris is the only thing that is at all reliable. The space between the abutments may be first filled with plaster, which is allowed to set. This is then removed, trimmed and varnished, when it is put back in place and an impression taken over it. Modeling compound may be used if the space to be bridged is short, but nothing is as accurate as plaster.

Upon removal of the whole, there will be the impressions of the incisors or other teeth which are not to be included in the bridge. Into these pins are inserted, and then a small amount of fusible metal poured into each, thus giving them metal tips. The same may be done with the sockets of their antagonizing teeth when the occluding bite is taken, and thus will be obtained metal points to each, which will not be worn away, and which will give and retain through the whole process of the setting-up a perfect articulation that will not be destroyed or modified. This is not a slow method. The fusible metal is very easily and quickly melted in an old spoon, and it cools quicker than plaster will set. The whole of the antagonizing tips may be made in two or three minutes.

WEDNESDAY AFTERNOON SESSION.

A paper was read by Dr. Stainton entitled—

OUR JOINT DENTAL MEETINGS AND THE EXPENSE ACCOUNT.

Dr. FRANK FRENCH opened the discussion by saying that there are, no doubt, great opportunities for missionary work, and great necessity for it. But it is equally certain that, personally, he was not cut out for a missionary. There are many young men who should be gathered into the fold of the dental societies. But there is a feeling on the part of the young men that the societies are made up of older men who have made their place in life, whose battle for a position has been fought and won, and that now, having made their calling and election sure, they are great sticklers for ethics, and very bitter against men who in their struggles may resort to some kind of advertising. They feel that if they once join the societies they will be bound by the same iron rules which govern the older members, and they believe that their chances for success will be better if they preserve their freedom to take any steps which they may

choose to take. Hence they hold aloof and keep outside professional rules. This is lamentable, but it is a fact. If these men can be taught that their chances for success will be better if they seek the companionship and assistance of their brethren, they will come into the societies, and our efforts should be directed to this end.

Regarding success from a money point of view, it is not the city dentist who has the most cash. It is more apt to be the other way. Expenses in the city eat up everything. A former student of his, who had settled in a small town, told him that his whole expenses of living and office did not foot up as much as the mere office rent of the speaker. Yet he earns a fair amount, and is thus enabled to save nearly the whole of it. The expenses of dental meetings should be kept at the lowest practicable point, but it is poor policy to exhibit a penurious, money-grubbing spirit. In Timothy x: 16, or thereabouts, may be found the following excellent aphorism: "There is that scattereth, and yet increaseth; and there is that withholdeth more than is meet, but it tendeth to poverty."

Dr. HOLMES: I believe that it is the wish of the members of the Sixth District Dental Society that these Union Meetings should be continued. We have found them pleasant and profitable, and we do not begrudge the small amount of money that it costs us. I do not believe in measuring everything by the money standard. There are some things which cannot be bought and paid for in money, and there are some things that I dislike to see reckoned up in that spirit.

Dr. DOWNS: We discussed the question of the continuance of these meetings at our annual session. The question of inviting the presence of the dental dealers was also considered. They are apt to interfere with the success of the whole, unless they work in harmony with us. There are about three classes of dentists who attend dental meetings. The first and smallest number go there to read papers, to join in the discussions, and be benefited by what is said and done. The second class goes to see the sights, to hear the big guns, if any are on hand loaded, and to be able to tell their patients that they have been attending a professional meeting, and to boast of what they did and said. The third class goes to have a good time, and to buy stock. The latter class will be found at the hotels and places of amusement the most of the time. The second class goes into the hall for a few minutes, to see the sights or to hear some specially interesting speech, and spends the rest of the time in the rooms of the stock dealers. It is only the first class that supports the meetings. The depots catch the other two classes. They are of no benefit to us.

At Buffalo, our meeting was held in a hotel, and the dealers hired their own rooms. Here we have engaged the building, and rent out space to

the dealers, and that helps out the expenses. I doubt very much if we have made any improvement in letting each pay for his own dinner. I believe in the banquets. They do more than anything else to hold us together socially. At the Elmira meeting there was no assessment needed. The expense to the Society with which the meeting is held only comes occasionally, and it is not very heavy. When we go away we have the expense of traveling, and that is more than that of entertaining. Besides, to give the dinner encourages a feeling of hospitality. The visitors are our guests, and that makes another tie to bind us together. Really, I do not think that any society has ever felt it a burthen.

Dr. BUTLER: The question of getting every reputable dentist into the Societies is one that should interest us all. New men are coming into the profession all the time, and they should be drawn into the societies at once. We ought to have a special committee, whose duty it should be to get these men into the societies. Young men feel a timidity in coming forward, and the societies should reach out after them.

Dr. DOWNS: I believe in making the society such that no one can afford to stay away from its meetings. I do not believe in societies reaching out after a membership, any more than for a dentist to go out after patients. He should make his office so attractive, and do his work so well, that people will come of their own accord, and that is just what the society should do. If the programme is properly made up and the names of young men put on it, they will attend.

Dr. W. W. COON: One thing that makes men fear to come into the Societies is the examinations to which they are subjected. The young graduate has usually got enough of them to last him a long time, and he does not wish to submit himself to the hands of his brother practitioners. I do not think that the matter of expense keeps any one away. That is not to be taken into comparison with the amount of good obtained.

Dr. DARBY: I do not understand what is meant by examinations. There is nothing of that kind in either the District or State societies, nor do they usually draw the line very finely on character. They take about any one whom they can get.

The expense is not to be taken into account. It is very little anyway. Dealers are glad of the chance to show their goods in the building where the meeting is held, and are usually quite willing to pay liberally toward liquidating the necessary expenses of the sessions and the banquet. We can get up a good dinner for very much less than the sum of \$250.00, which was mentioned in the paper read.

Dr. W. C. BARRETT believes in societies, and believes in dinners. He has attended some notable banquets that formed eras in his life, and that

signalized the societies which gave them. Such times of social intercourse have often done more to smooth away the asperities of professional competition, and erase the jealousies of professional life, than any other possible means. He has before now strongly urged the propriety of each paying for his own dinner. He wished now to recede from that ground. The men whom we most wish to get into the dinners are those who are least likely to attend if they must pay for it. The great difficulty is that we make these banquets too elaborate. A kind of spirit of emulation is excited, as to which society shall entertain most lavishly.

Why may we not take a leaf out of the book of German societies? They secure a keg of lager beer, a bushel or two of pretzels, and a hundred or so sandwiches, and at an expense of twenty-five cents apiece have a better time than we do with our champagne and Strasburgh patés. They attend a "commerz" for the purpose of listening to the music, or hearing the speeches, and not to put on style. We could dine as satisfactorily if we did not fare so sumptuously. But in any case, whether it is to be beer or wine, we want the dinners to be given. Whether the repast be cold mutton and brown bread, or a dinner of seven courses, he is in favor of it, and of meeting and breaking bread together like gentlemen. Furthermore, he likes Dr. Downs' idea of assembling as hosts and guests, and is ready to serve in either capacity.

Dr. ADAMY: There is no certain way to get men into societies except by law. We should have such legislation as would compel every dentist to join a society—such a law as the medical men have. No one is permitted to practice medicine until he becomes a member of the regular legal society. Doubtless the expense has nothing to do with joining societies. It is the restrictions upon personal conduct that keep men away.

Dr. OSGOOD: It seems to be the unanimous desire to continue these meetings. Our turn comes next, and in behalf of the Seventh District Society I extend a hearty invitation to every member of the societies represented here to meet with us in Rochester next year. We are sorry that the Fifth District is not officially represented now, but we wish to extend a special invitation to every member of that society to attend next year, and we sincerely hope that they will be there as a society and not as individuals.

Dr. Low: I would like to ask Dr. Stainton what he thinks would be about the proper form for a dental meeting. Would he, to save a dollar or two, hire a circus tent and hold a basket picnic? Men can go to any hotel that they may choose. They can stop at a two-dollar or a five-dollar house, and they can spend as little or as much as they may wish. It is entirely within the power of any man to regulate his own expenses.

Dr. HOWARD: The success of these meetings depends largely upon the business committee, and the programme which they may present. Here the whole arrangements are admirable, and as a consequence we see a meeting that is constantly increasing in interest. One difficulty of the meeting in Buffalo was that there was no concentration. There was too much scattering and the members were not held together. There were too many counter-attractions also, and dentists were everywhere, except in the hall.

CORRESPONDENCE.

Editor Dental Practitioner and Advertiser:—I see that the editor of the *Dental Review* takes you to task in the October number for what he considers the misspelling of the word arsenicosi. I must take the blame on my own shoulders, by stating that the word was printed just as I wrote it. Moreover, Acidum arsenicosum is the spelling found in the Pharmacopœa Germanica, and in all German works on materia medica, as well as in two other pharmacopœas which I have examined. I am inclined to think that arsenicosum, and not arseniosum, is the proper spelling. It would be interesting to know why the United States Pharmacopœa has left out the c, when it is retained in English words similarly formed, such as bellicose, jocose, varicose, etc.

Sincerely yours,

W. D. MILLER.

Editor Dental Practitioner and Advertiser:—Would you be kind enough to give a place to these lines in the next issue of the Journal? Reading the discussion of the Herbst method of treating pulps, in the October number of the *Dental Cosmos*, I am astonished to see that the Baume method of treating pulps immediately after using the arsenic acid is not known in America. This consists simply in applying a very small amount of borax in the pulp chamber, covering it with any material, except cement which will not harden in contact with the borax, and then fill as it is desired. I have used this simple method for three years, in over three hundred cases, with only four failures.

I think there is no other method giving better results with so little labor. I hope that some dentist in the States will try this method, and give us his judgment upon it.

Yours truly,

Dr. EMIL C. W. SANDREY.

VIENNA, Austria, Nov. 10, 1892.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, EDITOR.

BUFFALO, N. Y., JANUARY, 1893.

FILLING THE ROOTS OF SECOND MOLARS.

The following question has been sent us, with the request that it be answered in these pages:

"If a superior second molar, with pulpitis and pericementitis to the extent of soreness is presented, and you decide to destroy and remove the pulp and fill the roots, how would you proceed in detail, the patient being in good general health and the mouth in fair condition?"

The second molar presents but few complications that are not found in the first. It is further back in the mouth, and hence a little more difficult of access, but the roots or pulp chambers do not differ materially. The first symptom that demands attention is the pulpitis, for the pericementitis is dependent upon that. If there be considerable congestion of the pulp, it sometimes is not easy to destroy it without considerable pain. Usually, however, this will yield when the cavity of decay, which we will assume is the cause, has been cleaned out, and the pulp thoroughly exposed and bled. If not, tincture of aconite will give relief.

Of course it makes a great deal of difference where the cavity of decay is. If it is in the occluding, or mesial surface, there will be little trouble. If it is upon the distal aspect, the task will demand more care and skill. In either case, the cavity should be thoroughly rinsed with warm water, using repeated douches. With enamel chisels the cavity should be opened up so as to allow free access. The rubber dam should be applied, and the cavity dried out with the hot air blast. Usually this will obtund the tissues sufficiently to allow working without severe pain. If it does not, carbolic acid may be used, and the decayed tissue and debris should then be as thoroughly removed as possible. All pain will by this time usually have ceased. If it has, the pulpitis will give no further trouble. If not, medication with aconite may be necessary. If there be excessive tenderness in the living pulp, this may be overcome by applying a solution of cocaine.

I know of no better devitalizing application than that recommended

by Dr. Miller, in the July number of this journal. It consists of equal parts of arsenious acid and cocaine hydro-chlorate, mixed into a paste with a sufficient quantity of carbolic acid. A little—a very little—of this should be placed in a minute cup of tin or lead, prepared as follows: From a sheet of taggers tin, or rolled tin, or lead, punch out, or with the shears cut out, a disk of a sufficient size to cover the bottom of the cavity. Place it upon a piece of soft wood, and with the rounded end of an excavator handle indent it until it has a cup-shaped depression. Put the arsenious acid mixture in this, and carry it to place over the exposed pulp.

My usual way is to cover this with a pledget of cotton dipped in chloro-percha. Miller recommends the oxy-sulphate of zinc, or even plaster of paris, and these no doubt have their advantages. But by the use of the protecting disk, pressure upon the exposed pulp by a cotton plug may be avoided. I leave this application in the cavity about forty-eight hours. It may probably be left longer without danger, but at the end of two days I usually find the pulp thoroughly devitalized, and without much sensation.

At the end of this time the dressing is removed, using the rubber dam as before. The pulp chamber is opened thoroughly, and an antiseptic introduced. This may be one of the essential oils, or it may be our old and much abused, yet excellent friend, carbolic acid. I propose to coagulate the ends of the dentinal fibrillæ, if it has not already been done, which is most probable. The cavity is then sealed up again for another two days, when it is once more opened under the same precautions as before. A delicate Donaldson barbed broach is now introduced into the root canals, turned a little and withdrawn, usually with the pulp clinging to it. I do this for each of the three roots—if I can—then introduce pledgets of cotton upon a delicate smooth broach, carrying them as near to the apex of the roots as possible, and again seal the cavity up, unless there be some urgent necessity for haste.

When I am ready for filling the roots, I do it with chloro-percha, pumped into each with a smooth broach. When I am satisfied the root canal is full, I introduce a gutta-percha point, and that root is supposed to be effectually sealed for all time.

I said that I go to the apex of each of the three roots if I can. Unfortunately this is not always practicable. I may state it stronger than that, and say that it is not often possible. The conformation of the roots will not permit. There is usually but little difficulty in finding and reaching the apex of the lingual root, but the other two are not as accessible. In the first place, both the anterior and posterior buccal roots are frequently curved, the flexure usually being forward. This makes the anterior root canal hard to find and follow, even if the opening be pat-

ulous. If the cavity of decay be upon the distal surface, it is absolutely essential that it be extended up through the coronal surface, quite to or past the central pit. The openings of all the roots must positively be uncovered.

If with a delicate broach I find that I cannot penetrate either canal, or for but a short distance, I seal the cavity up with gutta-percha, first introducing into it a small pledget of cotton wet with an antiseptic, and leave it for a week or ten days. By this time the contents of that canal will have sloughed away, or at the least will have separated from all attachments, and will come away of its own accord, without putrefaction. I can then treat and fill the canals as well as possible. If they are too small to admit the most delicate broach, I have not much fear of their containing sufficient matter, even though it have putrescent possibilities, to cause any harm. I cannot believe that the contents of the dentinal tubuli ever become septic. The tubuli are too small to permit the entrance of putrefactive organisms, or if not, the amount of putrescible matter is not sufficient to produce septic complications.

To a much less extent is this true of those root canals that are too small for the entrance of a fine broach. If time enough be given for the sloughing of the canal contents, and if then they are subjected to the penetrating action of an antiseptic, and finally if the mouth of the canal be hermetically sealed with gutta-percha, I will take my chances with it. There is, in fact, nothing else to do, for my wildest flights of imagination do not reach to the point of successfully drilling out such roots as these, with any possible kind of a drill.

The posterior buccal root has even another possible complication. It is apt to be wide and flat, and very thin in the center, the canal having the same characteristics. At either lateral border of the root there may be a channel, while in the center it is very much constricted, or even obliterated. There may be chambers somewhere along the course of the canal, which it will be utterly impossible thoroughly to clean out. There is absolutely no way of removing any pulp tissue from them, except by the slow process of allowing it to disintegrate and slough out, antiseptics being excluded, for they would tend to prevent this. If the pulp chamber be open, this may sometimes be permissible, trusting to the penetrative power of antiseptics thoroughly to cure them afterward.

But with the utmost care and thoroughness there will be cases presented in which it is quite impossible to be sure of the condition of the roots. At least I find it so in my practice, for I am not one of those who can see to the bottom of an impenetrable root canal. But with thorough antiseptic treatment, I have little fear of any subsequent trouble from such roots.

It may be urged that all this is a very tedious and prolonged process.

Well, if the dentist is not prepared to give to the case all the time and attention necessary, he had better not undertake it. The proper treatment and filling of the roots of a superior second molar tooth is a process that requires care, and patience, and skill, and he who does not possess enough of the last two to insure the first, can never take rank as a successful operator.

"IT IS A DIRTY BIRD THAT FOULS ITS OWN NEST."

The ill-considered remarks of many ignorant or prejudiced writers in American dental journals, are responsible for the low repute in which the American dental degree, and American ethics in general, are held in Europe. These articles are read there, and accepted as faithful delineations of professional affairs here. One never reads in their journals, or in the proceedings of their societies, articles assuming to give the true status of professional affairs, but which are either Jeremiads or Philipics, representing a state of things that would be disgraceful to a trades union. Many foreigners really are persuaded that American dental colleges are but a burlesque upon educational institutions. Not long since, Dr. Mitchell, of London, contrasted English and American teaching to the disadvantage of the former, and such a howl went up from English journals and English dentists, as would lead one to think that the constitution was in danger.

And yet there must be some points of advantage in American schools, or so many Englishmen would not come here to attend them. No one ever heard of an American who went abroad to study dentistry.

The editor of an English journal, in commenting upon one of these ill-advised and misleading articles, says: "One rises with the impression that whatever else the American schools may be, they are directly antagonistic to the interests of the profession at large. Why? Because many have been started, not with the idea of teaching, but simply with that of making money. They, therefore, do not much care about the quality of the men they turn out, so long as there is a quantity. And not only is the profession overcrowded with inferior men, but the very schools themselves enter into a competition with their own graduates, and this not on equal terms, for whilst the graduate is debarred by professional etiquette from advertising, the school does so *ad lib.*"

Is it any wonder that foreigners get such an impression as is contained in the above, when that opinion was admittedly founded upon an article in one of our own journals, prepared by a dentist who was writing up the Examining Boards and writing down the colleges? Would the editor of any English journal admit such an article to his pages, think you? But American editors seem very glad to accept them.

Quite enough of these calumnies have appeared, and it is time that a halt is called. There are very few men engaged in teaching in our schools, who receive a decent compensation for their services. There are a few schools, which may easily be counted upon the fingers of one hand, and which are in the control of a few men that make money. Every dentist knows what ones they are. But it is not claimed that these few schools do not offer proper facilities for study. The most of our colleges are connected with universities, and if there is any profit after paying the meagre salaries which their teachers command, it all goes toward building up the university, and enlarging its boundaries. There are very few dental colleges which have a private and speculative proprietorship, or in which it matters much to their teachers whether a student is graduated or not. To the great body of dental teachers, the work is purely one of love and professional beneficence.

WESTERN NEW YORK UNION MEETING.

Before the organization of the New York State Dental Society, twenty-five years ago, the western half of the State was covered by the old "Western New York Dental Society," and those who are the older dentists of to-day—they were a quarter of a century younger then—meeting together, formed friendships which have stood the test of all these years. When the State was professionally divided into the eight dental districts, and a society organized in each one, there were loud lamentations that the halcyon days of the springtime of professional life, the period of intimate professional association, was over. But a way out of the difficulty was discovered, and it consisted in a union of the four western District Societies, for the purpose of holding their semi-annual meetings together. This arrangement has been kept up for a long time, and has worked very pleasantly.

But it throws something of a burthen upon the society which acts as host for the occasion, though it has been one that always was gladly assumed. Two years ago, the Fifth District Society withdrew from the arrangement. This was not because of any dissatisfaction or disaffection on their part, but rather through some misunderstanding among the members. The last union meeting that met in Syracuse, one of the most successful ever held, left in its train some heart-burnings, due to a want of consideration, perhaps. There was more of zeal than discretion on the part of some, and as a consequence, a lack of harmony ensued.

This has been a cause for regret to the members of the other District Societies, and they now hope that the former complete circuit may be re-established. There are so many good men in the Fifth District, men

from whom the members of the other Societies have been glad to learn, and there are so many tender ties of more than twenty-five years' growth, that it is a pain to be separated from them at the time of the union meeting. Some of them persist in attending anyway, but the others wish their official presence. They cannot become reconciled to the thought that one of the sisters is not present at the family re-union, even though many of her children are there. Next Fall, at Rochester, there is, we believe, good ground for the hope that the old circle will again be complete.

"AND ARE WE SO SOON FORGOTTEN?"

In the last number of this Journal, we spoke of the illness of Dr. W. H. Dwinelle. We are sorry to say that he has not since then made the improvement that was desired, and still remains at his old home in Cazenovia. With the returning Spring, it is hoped that he will gather new strength and energy. We asked that those who hold his name in honor should remember him at the time of Thanksgiving, and at the least, write him a letter of kindly sympathy. He received — how many, think you? Just one. The pity of it.

When Rip Van Winkle returns to his old home after his sleep of twenty years in the mountains, he finds not only that he is unrecognized by his former companions, but that he is even lost to memory. Will any one who has heard it ever forget the pathos and emotion in the voice of Jefferson, when he musingly exclaims, "And are we so soon forgotten?"

We have heard many a dentist speak of Dr. Dwinelle in tones of reverence and affection. We know that this was not mere affectation. Was there not one of these to write him a letter of cheer and good-will? He is removed from the busy scenes of the days of his active years. Is there no recollection of what has been among those with whom he worked so long and so faithfully? "Are we so soon forgotten?" These are not very cheerful reflections for any man who is on the downhill path of life, and who knows that he too cannot much longer keep the pace set by the younger ones. It is but poor encouragement for those who are trying to do something for their fellow men. Can it be that he alone is the wise man who lives a life of selfishness, and who labors only for himself?

But no, there is another point of view. Dr. Dwinelle was not forgotten. Many a heart breathed a silent benison upon his name. But men are careless. Each trusted that the other would perform the duty which many owed. Each was heedlessly busy with his own affairs, and so the honored old man waited in vain on Thanksgiving Day for the letters that never came. Away from the beloved professional associates of his younger years, he sadly pondered, "And are we so soon forgotten?"

THE CORRECTOR CORRECTED.

On another page will be found a letter from Prof. Miller, concerning some good natured criticisms in the October number of *The Dental Review*. The editor of that journal has so long stood as an authority in matters *Materia Medica*, that we are rather astonished at the lapses in his own journal of that date. Perhaps his criticism set us to looking for them. The paragraph referred to reads as follows:

"A CORRECTION THAT DOES NOT CORRECT.

"The learned editor of *The Dental Practitioner and Advertiser*, in his October issue, corrects the prescription of the erudite Miller, published in the July number. What must be his 'feelinks,' when he discovers that *arseniosi* is spelled 'cosi,' which makes us to remark that the sympathy of a brother in distress goes out to him in his hour of trial. But there is a bright outlook ahead—the thought that the proof-reader will once more have to wrestle with his manuscript, should sustain him; he will get at him again—say in January, or even in December's dark days. That's the way we punish 'em. No holiday gifts will efface the hours of anguish spent in trying to decipher *his* hieroglyphics—nor ours for that matter."

That stone should not have been thrown, for upon its rebound the shiver of glass in the house of *The Review* may be distinctly heard, while ours is as yet intact. We reprinted Prof. Miller's prescription because of an error in its form, for there was no mistake in the spelling. But the same number of *The Review* which contains the above criticism shows the danger of venturing on thin ice. For instance, on page 786 we find several prescriptions which are rank offenders. Adjectives, such as *carbolic*, *tannic*, and *rectificat*, are spelt with capitals, which is entirely wrong. Then again, in all the prescriptions we have *Aqua* instead of *Aquæ*. This is bad enough, but *Aqua Destillati* instead of *Aquæ destillatæ*, is enough to make a schoolboy groan.

Partes i, is absurd. It should be *partem i*, and *partes iii*. *Sodi* should be *Sodii*, and *Spiriti* should be *Spiritus*, since it is a noun of the Fourth Declension, like *Fructus*. Surely the man who is competent to act as a censor of Latin composition, cannot have utterly forgotten his Latin grammar. There are other errors, such as those of punctuation, but this is enough merely to hint that the man who is an authority on *Materia Medica* and a critic in Latin terminations, should move out of a house with such thin glass walls before he commences to stone his neighbors.

Concerning the "hieroglyphics" we plead guilty. Our kettle *has* a black bottom, but, Great Cadmus! we had a letter from this accusing pot, not long since, that——! Well, never mind; we have repented of the language used on that occasion, and hope the recording angel has blotted it out forever.

BIBLIOGRAPHICAL.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. Black, M. D., D. D. S. Second Edition. The Wilmington Dental Manufacturing Co., Philadelphia, Pa.

Black's Dental Anatomy has already secured an established place in our literature, as a standard text and reference book. There is nothing like it published. It is not histological in its character, nor does it pretend in any way to be a work on structure, but in descriptive, or more strictly speaking, morphological anatomy, it stands alone. It is especially valuable because it presents a complete system of nomenclature for describing the teeth. This was much needed. For many years it had been impossible minutely to describe tooth forms, because of the lack of any systematic and widely adopted terminology. Different writers and dental anatomists had proposed special descriptive names, but they were either isolated, segregated terms, or if arranged into a system it was complicated and unscientific, or made up of heterogeneous elements.

We cannot say that the system presented by Dr. Black is entirely satisfactory, but at least it is a system, and that is a long step in advance. By it there is a possibility of exactly expressing one's self, and distinctly indicating any portion of any tooth.

The illustrations, which are numerous, were all made from original drawings by the author. Many of them are upon too small a scale to show the different parts distinctly. When there are twelve or fifteen "leaders" and reference letters pointing out different parts of a cut only five-eighths of an inch in length, they are too much crowded for clearness.

The book is one which no intelligent dentist can afford to do without. The fact that a second edition was so soon called for is ample evidence of its merits.

AN ARTIST IN CRIME. By Rodrigues Ottolengui. New York: G. P. Putnam's Sons, 1892. Paper Cover. Price 50 cents.

This fascinating novel presents Dr. Ottolengui in a new light. We have known him as a dental practitioner, and as a prolific writer in dental journals. Henceforth we must look upon him as a successful novelist, for if this work does not have an extensive sale, then we have very much misjudged its merits. We have never been a novel-reader, and have in vain made more than one determined effort to wade through some stories that are almost classical. But when Dr. Ottolengui's book was taken up, it was not laid down until it was finished.

The plot is worthy Wilkie Collins. It is original in conception, and its consistency is maintained to the close. The individuality of each character is well preserved, while the scenes are natural and always

distinct. In the opening chapters, we thought it would be utterly impossible for the author to maintain the highly wrought interest to the close, and to avoid an anti-climax, but we found ourselves mistaken. The art displayed is almost inimitable. It is so hard, for instance, for a young author especially, to know when to drop the curtain and close the performance, and indeed the characters of many of the older and more famous writers often linger superfluous on the stage. But the author of "An Artist in Crime" stops when the story is finished, and even flatters his readers by leaving something for their acuteness to furnish.

It would be folly to assert that there are no weaknesses in the book, or that an occasional crudeness does not at times manifest itself. But even when we have detected what we thought were such, there has invariably been found some extenuating circumstance. The opening sentence, for instance, reads: "Jack Barnes never gets left, you bet." This little bit of slang is neither in harmony with the general character of the book, nor with that of the detective himself, who is rather the opposite of what his first words would seem to imply. But the sentence is impressive and striking; it serves to fix the attention which is held to the end, and hence it is justifiable.

It would be difficult to imagine a more dramatic scene than that at the dinner at which the denouement takes place. Even the little by-play has its interest, and indicates not only that the actors themselves were consummate artists, but that the author is one also, in so skillfully misleading the reader up to the very instant of the final revelation.

We have lingered over the book, both because of its fascination, and of the fact that it is written by one so widely known in dentistry. We can only urge our readers to get and read it.

A STUDY OF THE DEGENERACY OF THE JAWS OF THE HUMAN RACE. By Eugene S. Talbot, M. D., D. D. S. Philadelphia: The S. S. White Dental Manufacturing Co., 1892.

This is a reprint from the pages of *The Dental Cosmos*. Dr. Talbot is well known as a writer on dental abnormalities, who has probably made a closer examination into the cause than any modern writer. Whether or not he accepts all the author's conclusions, there is no fair minded man who will not admire the patience and perseverance with which Dr. Talbot has followed up his subject, and sought to obtain data and statistics from every available source. He has, without doubt, succeeded in materially modifying the views heretofore held concerning the etiology of dental deformities. This little work is mainly devoted to the evolution of hereditary peculiarities, and as such is of great interest to every dentist.

THE RISE, FALL AND REVIVAL OF DENTAL PROSTHESIS.

By B. J. Cigrand, B. S., D. D. S., Chicago: 1892.

This little book contains a great mass of information, some of which is reliable, and some exceedingly doubtful. There is a mixture of real historical fact and old woman's tradition, that is at times amusing, for all seem to be treated with the same sapient gravity. Where, for instance, is the proof that the ancient Egyptians ever filled teeth with gold? The assertion has frequently been made, but never substantiated.

The author has an extravagant idea of the comprehensiveness of the term "Dental Prosthesis." He expressly states that it covers every dental operation except extraction and devitalization. It must then include the treatment of pyorrhoea, of stomatitis, the removal of tumors, and all the thousand medications and operations demanded in the human mouth. This must either be the case, or the author's conception of dentistry is very narrow indeed.

There are some illustrations which are copyrighted, but which appeared exactly as here given in the *Independent Practitioner* of years ago. There are others marked "copyrighted," which probably were made before the author was born.

Of the literary merits of the book, the less said the better. It is rather late in the day to commence a new system of grammar, unless in a work specially devoted to that purpose. It seems a pity that the really useful information, of which the book contains considerable, could not be winnowed of the problematical traditions of ignorance, and the whole presented in a more scholarly manner. It is not a sufficient excuse for a book that the author has something to say. He should know how to say it.

THE ESSENTIALS OF HISTOLOGY, DESCRIPTIVE AND PRACTICAL, for the use of Students. By E. A. Schäfer, F. R. S. Third Edition. Enlarged and Revised. Philadelphia: Lea Brothers & Co., 1892.

Most of the works on histology are either too large and elaborate for the use of students in our schools, or they are mere compilations of odd scraps of knowledge, without much sequence or system. Neither of these objections can be urged against the work of Prof. Schäfer. It comprises all the basal facts of the science, but omits the details. It gives ample directions for the microscopical examination of the principal tissues, without clogging the mind with a mass of non-essential facts.

The work is based on Quain's Anatomy, and many of the illustrations are from that work; but many more are entirely original, and some of them are a revelation in their clearness. For the use of the young student who is commencing microscopical research, there is no better work, and it should be made a text book in all our schools.

CURRENT NEWS AND EXCERPTS.

HERBERT A. BIRSDALL, M. D., D. D. S.

DIED.—In Buffalo, December 12, 1892, after a brief illness, Prof. Herbert A. Birdsall, at the early age of thirty-two years.

It is seldom that the dental journalist is called upon to chronicle a death that brings with it so much of regret as this. There seemed so much of promise in the future for him, he had already attained so high a position, and was so admirably filling a place of such usefulness, that one stands appalled at the severity of the stroke.

He was the son of William M. and Maria Birdsall, and was born in Armonk, Westchester Co., N. Y., November 3, 1860. When he was yet an infant his father died, and his mother moved to Dutchess Co., where the early years of Herbert were passed upon a farm. He attended the country school, where was laid the foundation of his education. Later, he became a student at Oakwood Seminary, Union Springs, N. Y., where he graduated in 1881. He immediately took up the study of dentistry with a local dentist, and shortly commenced attending lectures in the Philadelphia Dental College, where he graduated in 1884. Immediately thereafter he came to Buffalo, and formed a connection with Dr. Leon F. Harvey. Upon the retirement of Dr. Harvey in 1887, he succeeded him, and thenceforth commanded a large and constantly increasing practice up to the time of his death.

He commenced the study of medicine shortly after coming to Buffalo, graduating from the Medical Department of the University in 1889. When, a year ago, his *Alma Mater* determined to establish a Dental Department, Dr. Birdsall was one of those called upon to organize it, and he took the chair of Dental Materia Medica and Therapeutics, and was elected Registrar of the Faculty. He entered upon the discharge of his college duties with the same conscientious fervor that characterized all that he undertook. His heart was in his work, and he had already developed a rare ability as a teacher, although he had but fairly entered upon his first course of lectures.

In 1890, he made the tour of Europe, attending the International Medical Congress, which met in Berlin. Last year he again went abroad, and spent the summer in travel and in study at some of the principal art centers, for he was fast developing unusual artistic ability. Indeed, he possessed qualities of both head and heart that are as rare as they are admirable. His amiability and never failing high-bred courtesy endeared him to all who knew him best. He had been reviled, but he reviled not again, and the deep regret that he expressed to his most intimate professional associates at injustice which was done him, was never tinged by any feeling of personal bitterness. So pure, so lovable, and yet so earnest a nature is seldom met. It was a privilege to know him, a distinction to possess his confidence. There was a delicacy of feeling, a refinement of sentiment in him that was perceptible to even the casual observer. He had literary ability of a high order, and his published papers and his lectures before his college class were models of composition.

His remains were conveyed to Bangall, his old home in Dutchess Co., where they were interred.

At the regular meeting of the Faculty of the Dental Department of the University of Buffalo, held on the evening of the day of his death, the following preamble and resolutions were unanimously adopted:

“The Faculty of the Dental Department of the University of Buffalo, desires to express its profound sense of the great personal loss which each has sustained in the death of their

colleague, Prof. Herbert A. Birdsall, as well as their appreciation of the serious blow which the college itself has sustained.

"He was not a stranger when we first took seats together in the Faculty room, but was endeared to some of us by years of close professional association and personal friendship. His never-failing amiability and constant courtesy, his fine literary attainments and great professional skill, had long ago won our affectionate admiration. But it was only when we became associated with him as a teacher, that we recognized the enduring faithfulness, and the patient, conscientious devotion to duty that was the mainspring of his every action.

"His ability as an instructor had already been more than demonstrated. His lectures before his classes were always lucid, comprehensive and systematic; while the choice, and even poetical language in which his thoughts were clothed, gave to them an indescribable charm. His modesty and lack of self-assertion, his obliging cheerfulness and thoughtful consideration of others, endeared him to his pupils and made them rapt listeners at all times. His purity of life and transparent honesty in all things seemed an atmosphere that enveloped him, and repelled everything that was coarse and gross in its nature. He was a model man, an ideal teacher, a loyal friend and a delightful colleague.

"We deem it but fit and proper that a permanent record of our great sense of bereavement be made, and to this end the Faculty assembled, by unanimous vote, orders the adoption of this preamble and the following resolutions:

"*Resolved*, That the Faculty of the Dental Department of the University of Buffalo, hereby expresses its high appreciation of the great moral and professional worth of Prof. Herbert A. Birdsall, and its profound sorrow for his too early death.

"*Resolved*, That a memorial page be set apart in the book of records of the proceedings of this body, and that this preamble and these resolutions be engrossed upon it.

"*Resolved*, That a copy be transmitted to the family of our deceased colleague, and that we attend the funeral in a body."

REFINING GOLD.

In melting scrap gold, filings, etc., care should be taken to see that it is quite clean, and free from organic matter, etc. It is a good plan to heat the scrap in an iron ladle until all wax, grease, etc., are removed, before placing in the crucible for melting. Always melt old gold by itself, using sal ammoniac and charcoal in equal quantities as a flux. When the ingot has been cast and cooled, test its malleability by rolling or hammering. If it should split when rolling, it is due to the presence of some foreign metal, such as lead, tin, iron or steel. If the latter, the ingot should be broken up and remelted with two parts of carbonate of potash and one part of nitrate of potash. The flux will combine with the iron or steel, leaving the gold free. Then cast and try the ingot as before. If the impurity be lead or tin, the metal will be very brittle, and when broken the grains will be close and pale. A very small quantity of lead or tin will render gold too brittle to work. It must then be remelted as before, using as a flux two parts of charcoal to one of corrosive sublimate, breaking the gold into small fragments, and mixing thoroughly with plenty of flux while melting. In this remelting so often, a serious loss in weight occurs, due to the elimination of the foreign metals; for this reason old gold should be melted and refined separately before using it to make alloys, otherwise the refiner will be seriously out in his calculations, and the resulting alloy will not be of the grade desired.

Filings should be spread on paper or glass, and a strong magnet passed over and among them repeatedly, to take out as much iron and steel as possible before putting in the crucible. This is a very simple method, and it will often save one or two remeltings, if attended to before commencing operations. Or the filings may be placed in a tall bottle, covered with a solution of one part of sulphuric acid to eight of water, shaken up and allowed to stand for some time. The acid will dissolve out the iron, steel, tin, copper and zinc filings, leaving the noble metals untouched. When all is dissolved, throw away the solution and wash the filings several times with pure water. Then dry and heat them as before described. It is best to waste the solutions and wash the filings through filter paper, in order to avoid the loss of very fine particles of gold floating in the liquids.

By thus remelting scrap separately, the refiner can come reasonably near to a homogeneous alloy to start with, and he can then raise or reduce its quality, or color it much more easily and certainly, than if attempting to mix scrap, filings and new gold at one operation.

Plumbago crucibles should be used, as they are far the best for melting metals requiring a high degree of heat, and with care they will stand from twenty to fifty heatings. If using a new crucible, a little powdered charcoal should be put into it along with the metal. This will coat the surface of the plumbago, and prevent the melted metal from sticking to it.

The pouring of the gold into the ingot mould requires some dexterity and practice. It must not be done so slowly as to allow the stream of metal to run down the sides of the crucible; neither should the stream be so small as to chill the metal before entering the mould, or imperfect castings will result, and give trouble in rolling the ingot. On the other hand, the stream should not be allowed to strike with force enough so slop over the mould, making rough and uneven castings. The flux floating on the surface of the metal should be prevented from passing into the mould with the metal by using a thin piece of dry flat wood, held with the left hand at the lip of the crucible while pouring. Poplar is the best, as it burns very slowly. The warming and greasing of the ingot mould should also be attended to carefully. If it is too cold or too hot the metal will spit and fly about on being turned into it. It should be so hot as just to allow touching with the hand for a second or two. If these details are carefully attended to, smooth, tough and malleable castings are pretty sure to result.

FILLING ROOTS.

The best indication that a tooth-root is in a proper condition to be filled may be found in its dryness. As long as it cannot be made perfectly dry, it is in no state to fill. The rubber dam, of course, should be in position when the time comes. Then thrust a delicate smooth boach as far into the root as possible, and immediately wipe it upon the rubber dam. If there is any moisture it can plainly be seen, and if this cannot be perfectly removed further treatment is demanded, both because the root is not fit to fill, and because it will be impossible to carry any filling material to the end of the canal. When pumping chloro-percha into a canal the distance to which it has penetrated may be told by a look at the broach. If it is clean for any distance from the point, the filling material has not penetrated beyond that place. The ordinary chip-blower, filled with hot air from above the apex of an alcohol or gas flame, makes the best root or cavity dryer.

INFANTILE CONVULSIONS—When called to a little patient in convulsions, put it in a warm bath—temperature of 98 degrees—and in less than two minutes, if the cause be nervous disturbances, the convulsed limbs will relax.

SIR RICHARD OWEN.

The greatest of all anatomists is no more. Sir Richard Owen, the author of some of the most widely known works on comparative anatomy, died in London, Dec. 18 ult., at the age of 88. He was not a theorist, or a man of striking originality of views, but as a patient, painstaking investigator of fact, and as an analyst of that which was discovered in his special field, he had no peer. He took up the work of the great naturalist Cuvier, and pushed it into fields unknown. To every comparative anatomist the name of Owen is a household word, and his "Comparative Anatomy and Physiology of the Vertebrates" has long been the standard text-book.

In comparative dental anatomy, his great work, "Odontography," formed the foundation of the most that is known of that branch of science. His books have been read mainly by scholars and investigators, and their sale has been limited. At the present time both of those named are out of print, and can only be obtained by picking up stray volumes that may come upon the market, and for which usually exorbitant prices are demanded. It was only after some years of search that we were enabled to find perfect copies. To those who are acquainted with his writings, his clear, lucid style, his great learning and his unerring perception of fact, have always made him first in his department of science.

LAMP EXPLOSIONS.

A great many dentists use kerosene oil for illumination, and for heating in the laboratory, vulcanizing, etc. Occasionally a lamp explodes, and the dentist perhaps speaks of the "exploding oil." Kerosene is not explosive. It is always the vapor or gas that does that. The process of purifying crude oil essentially consists in distilling it over a moderate fire. Of course the most volatile parts pass off first, and as the heat is raised that which is less so follows. Finally, the oil reaches a point at which no gas will be given off at any temperature likely to be reached in its burning in a lamp. Yet if it be subjected to an unusual heat by imperfect combustion, or some other means, a gas may be given off from high test oil that, when mixed with the right proportion of air, will form a highly explosive compound. Of course to collect this there must be some kind of a reservoir, and this will be formed by a partially filled lamp. If such an one is subjected to an unusually high temperature, and if the reservoir contain a definite amount of air, and then a spark be touched to it, there will be an explosion which, scattering the oil that immediately takes fire, may cause wide-spread destruction. It is usually the burning oil that does the mischief, however.

NERVOUS DISEASES.

Dr. D. G. Brinton, perhaps the most accomplished ethnologist in this country, says that the claim that diseases and disturbances of the nervous system become more common with advancing civilization, and are most frequent in the races of the highest culture, is a mistake, and is urged by physicians and others who lack information. The early Jesuit missionaries tell of wonderful epidemic nervous disorders among the Huron and Iroquois Indians. The *Journal de Médecin*, of Paris, points out the frequency of hysteria and hysteroid neuroses among the Hottentots and Caffirs of East Africa. The neurotic condition of the "Jumpers" of Lower Canada is well known, and the individuals subject to this are almost invariably among the least intelligent of their rather unintelligent class. Civilization, so far from increasing this class of maladies, is one of the most efficient agents in reducing their number and severity.

VARIOUS BLOW-PIPE FLAMES.

Thomas Fletcher, the well-known expert in practical metallurgy, gives the following directions for the use of the blow-pipe :

The flames may be separated into two classes. Those used for blow-pipe analysis are produced by air jets of small bore, and as smooth as possible inside; the theoretically perfect jet is made of glass tube drawn out small, and broken off where the required bore exists. The advantage of this jet is the perfect smoothness of the bore, which enables the operator to produce perfectly defined flames, with the reducing and oxidizing zones large and clearly defined. The disadvantage of the glass jet is its delicacy and constant liability to injury. Next to this comes the platinum tip, which remains fairly smooth inside; and last of all comes the simple and cheap brass nozzle so universally used. The flame in this class of blow-pipe is produced by an air pressure low enough to prevent the breaking up of the blue cone, the tip of which is the hottest part; inside this blue cone is the reducing flame; beyond it is the oxidizing zone. For brazing and soldering, a heavier air pressure and a larger bore jet are required; the blue cone is broken up, and the different zones of flame are much less clearly defined, and in practice are much less important. The flame is still roughly divided into a blue, or greenish-blue center, and an outer yellowish mantle, surrounding and projecting beyond the blue. The rough point of the latter is, as before, the hottest part, and this should touch the work to be brazed. It has a distinctly oxidizing action; but this is overcome in practice by the protection of the flux used, which must have the power of dissolving oxides.

RECORDING SCIENTIFIC OBSERVATIONS.

It is utterly impossible for some dentists to tell the exact truth about any unusual case in their practice, even though they may have the very best intentions. They are not attentive observers, and are not practiced in recording what they do see. They set down their own crude theories and speculations as absolute facts, and take for granted many things that are undemonstrated. We remember hearing a dentist tediously relate an "Incident in Practice," detailing the great difficulties he encountered in filling a tooth root, which he had considerable trouble in opening, but which he finally discovered had a large open foramen. Another dentist subsequently exhibited that same tooth to us, he having extracted it when the case finally fell into his hands, and it proved that the first dentist had drilled through the side of the root, not far from the apex, and had mistaken this artificial opening for the natural foramen.

Let a number of men attempt to give the details of any physical phenomenon that all may have witnessed, and it will be found that there are as many separate and differing accounts as there are relators of the incident. In the discussions of our society meetings there will be found statements of cases that are upon their face impossibilities. And yet the relators did not mean to misstate the conditions. They were only careless observers and heedless generalizers.

DRYING OF PAINTS.—We commonly speak of paints as "drying," and the term is entirely correct from one point of view. Yet it is not a process of dehydration, for, of course, there is no water to evaporate. It is a chemical process, the oxygen of the air combining with the oil to make a solid body. In the course of this oxidation the coloring matter of the paint mixture is fixed in the solidified oil, and hence the tint is permanent as long as the oil lasts. The preservative qualities of paint are due to the fact that the oil and pigmentary matter forms an impenetrable coating.

QUESTIONABLE INFORMATION.

Here are two articles, both from excellent authority—the first from perhaps the highest in the world—and yet they have an ancient and fish-like smell, highly suggestive of newspaper science and insufficient investigation. We do not believe that the native Sumatrans are microscopists, and that alone could give them knowledge of bacteriology.

MEDICAL REGISTRATION AMONG SAVAGES.—In a paper read before the Oriental Congress recently held in London, M. Claine gave an account of his recent explorations in Sumatra, among a tribe called the Karo Bataks, in distinction from four other families of Bataks who also inhabit Sumatra. While these latter are stated to be more or less cannibals, the Karo Bataks are more civilized, and have acquired considerable proficiency in medicine. The chiefs are the doctors, and in each district a kind of medical register is kept in manuscript. From a drawing on a manuscript composed of bark, which was exhibited, they appear to have attained to the idea of a microbe as a source of disease. Their teeth are generally worn down to stumps or decayed, and sometimes this is so much the case that copper plates to protect the gums are worn.—*British Medical Journal*.

SHEDDING BONES. (Dr. Bell, *Medical Standard*).—The woman, 71 years of age, seemingly in perfect health, and normal in every other respect, 21 years ago experienced an exfoliation of bone, beginning in her fingers, and during succeeding years continuing, until she has twice shed ulna and radius, humerus, scapula, and part of inferior maxillary. This shedding takes place spontaneously, without pain, hemorrhage, suppuration, inflammation, or, in fact, any inconvenience at all. There exists no deformity, supination, pronation, extension, flexion, and circumflexion being perfect. The bones exhibited to the East Tennessee Medical Society were found to be perfectly natural. The woman is conscious of the expulsion some minutes before it takes place, a perfect bone being left in the place of the old one, which always makes its way out on the posterior side, and the wound thus made heals by first intention, though scars are left in many places. There was given a good history, no cancerous or other diseases existing as far as known, and the woman had never been poisoned or exposed to chemicals.—*Western Medical Reporter*.

EXTRACTING ROOTS.

The brutal and unprofessional practice of some dentists of extracting roots by cutting through the gum and process with the forceps, to grasp a decayed root, has no excuse, and yet it is a common thing to do when the patient is under the effect of gas. Not infrequently the Fifth Nerve has been severed and facial paralysis induced by too deep a dip of the forceps in the extraction of a wisdom tooth. Cutting through the gum and process to extract a root below the free margin of the gum is malpractice, and a person so disposed can recover damages for improper laceration of the mouth.—*Extract from a Dental Essay*.

That is simply catachrestic nonsense. There is no tissue that so easily heals as that of the jaws. It is sometimes absolutely necessary to remove a root that is imbedded in the jaw, when there is no way of doing this but by excising the alveolus. Is a surgeon never justifiable in cutting to open an abscess, or to remove a tumor?

What does the writer mean by "The Fifth Nerve"? Does he imagine that there is danger of wounding the Casserian ganglion in extracting a wisdom tooth? Let him study his anatomy and see where the dentist would be obliged to go to sever the inferior maxillary nerve, or how he would reach the posterior dental in the upper jaw. "Malpractice," for excising enough of the alveolar margin to enable one to remove a root that needs to come out! Go to, young man; or in the vernacular, "come off."

SOLDERING TUBES TO REGULATING APPLIANCES.—Dr. W. H. Gage recommends that before soldering tubes to regulators or other appliances, they should be filled with a few fibres of asbestos to prevent the solder entering them and choking them up.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY.—We should be lacking in duty if we did not call the attention of dentists to this admirable work. It is precisely what its name indicates—a digest, an epitome of the periodical dental literature of the year. Any dentist who feels that he cannot afford the time and money to procure and read all the dental journals published, but who yet wishes to keep informed, may for the price of one of them employ a skilled and practiced reader to go through them all, and furnish a complete synopsis of what is of greatest professional value.

We hope that the work will be sustained, for it is to the interest of dental literature that it should be, a permanent record thus being made of that which is worth preserving. Those who desire the volumes for 1890 and 1891 should procure them soon, for the edition of the first volume is practically exhausted, and that of the second doubtless soon will be. The volume for 1892 will be issued soon. It may be obtained by enclosing \$2.50 to Dr. B. H. Catching, Atlanta, Georgia.

THE WORLD'S COLUMBIAN DENTAL CONGRESS.—The permanent officers have been named. Concerning the propriety of the division of the principal positions among the members of the Executive Committee, which was the appointing power, and which was itself practically self-appointed, we have nothing to say. If they can stand the reproach of it surely the rest of us can. But whether under such circumstances they become places of honor, depends upon how the subject is viewed. Of course this is entirely apart from any question of the individual fitness of the men, which is not now in any manner under discussion. The credit of the dental profession is, however, too much involved in the success of the Congress to allow of caviling. The only thing to do is to make a great gulp, and then resolutely to shut the mouth and turn to and work faithfully for the best results possible.

DORSENIA.—This is about the only obtunding preparation the merits of which do not depend upon cocaine. It is said to be composed as follows:

Listerine and water,	in quantity.
Carbolic acid,	3 parts.
Camphor,	2 "
Alcohol,	3 "
Glycerine,	2 "

The preparation advertised as Odontunder, or Wilber's Wonder Magic, is said to consist of a mixture of four per cent. cocaine and two per cent. carbolic acid, in equal parts.

TEMPERING MANDRELS.—Dr. Wedelstadt, of St. Paul, Minn., says that if screw-headed mandrels are tempered to a straw color they will outwear a hundred untempered ones. Both screw and mandrel should receive the same temper. We all know how soon the thread of the ordinary mandrel screw is worn out.

He sends a tongue and cheek holder made from celluloid that is very convenient. Most operators use a mouth glass for this purpose, which is soon ruined by touches from the corundum stone revolving in the engine.

HOW IS THAT?—"The Faculty of the Chicago Tooth-Saving Dental College requests the presence of yourself and friends to (*sic*) the opening exercises to be held in their rooms, No. 235 Wabash Avenue, Chicago."

We regret to our inability at the occasion.

THE BUFFALO DENTAL SCHOOL.—The new Dental Department of the University of Buffalo has forty-six matriculants. Of these, two came too late to have the term count in the required three years, and one or two others will not be able to make out the full term, because of inability to attend all the lectures. The new University Buildings are not yet completed, the contractors being away behind their agreement. This makes little difference with the Dental Department, which is comfortably housed in temporary quarters. The school sustained a great loss in the untimely death of Professor Herbert A. Birdsall, who was greatly beloved.

THE DENTAL TRIBUNE.—We have received from the editor and publisher, Dr. Louis Ottofy, Masonic Temple, Chicago, the first number of the dental weekly issued under the above name. It is an eight-page, octavo in form, is attractive in appearance and full of professional news. It is announced that it will be continued through the Columbian year, and longer if the support which it receives will warrant it. We hope that his success will far exceed the expectations of the enterprising editor, and that the new journal will become a fixture in our literature. The subscription price is only two dollars per year.

DR. L. W. BRISTOL.—Many will learn with regret that the venerable Dr. L. W. Bristol, of Lockport, N. Y., was seized with partial paralysis about December 1st. He is slowly recovering, but his advanced age makes restoration a slow process. He is the Nestor of dentistry in Western New York, and looks upon the rest of us as mere boys, who will be wiser when we grow up to years of discretion.

DR. C. N. JOHNSON, of Chicago, complains that the vendor of a certain extensively advertised local anæsthetic has been using his name without authority. But he does not tell who the scoundrel is, nor what the secret unprofessional preparation that has been thus advertised. Why not give the name, that the rest of us may beware of him?

THE PAN-AMERICAN MEDICAL CONGRESS.—A Section of Oral and Dental Surgery in the first Pan-American Congress has been organized, and has secured the sympathy and co-operation of a large number of dentists. Dr. M. H. Fletcher, of Cincinnati, is the chairman, and he is pushing the work forward with every prospect of success.

NINETEENTH CENTURY SENSE: MAN AND HIS WORLD.—We have received from the author, Prof. J. E. Garrettson (John Darby), too late for the careful reading necessary for a critical notice in this number, the two books named above. They will receive the attention which their importance demands in the next number of this journal.

UNIVERSITY OF BERLIN.—Prof. Miller is conducting the Operative Department of the Dental Institute alone, his colleague, Prof. Paetsch, having retired. This throws a large amount of additional labor upon him, but it gives him full scope to introduce any such changes as he may deem desirable.

ACKNOWLEDGMENT.—For the use of the cuts in the leading article of this number, we are indebted to the courtesy of the editor of "*The Dental Cosmos*." Indeed, the article itself, which was read before the American Dental Association, was first published by right in that journal.

THE
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DENTAL CHEMISTRY.

BY M. D. JEWELL, D. D. S.

Read at the Twenty-Fourth Annual Union Dental Convention of the Sixth, Seventh
and Eighth District Dental Societies of the State of New York, held at
Binghamton, October 25, 26 and 27, 1892.

Chemistry is the most important, yet, by the mass of our profession, the least understood of all the arts and sciences allied to dentistry. While your essayist feels highly complimented by being requested to present this important subject before such a body of scientific men, he fully realizes the magnitude of the responsibility he has assumed, and is equally well aware of his lack of that knowledge of his subject which is essential as a guarantee of a successful effort. Notwithstanding, he feels encouraged in the belief that there is an awakening interest among dentists for a deeper insight into the science of chemistry.

In handling this subject it will not be my aim to affect originality or novelty, but to direct your attention for a few moments to this hitherto much neglected branch of study, and thereby possibly arouse amongst us a longing for a more intimate knowledge of chemistry, by calling attention to its history, development and utility, and some of the most important of those laws which govern it and make it applicable to the enhancement of our usefulness as a profession, and the amelioration of suffering humanity.

There is probably no profession to which chemistry comes with greater promise of assistance than to dentistry. There is hardly an operation a

dentist is called upon to perform, that does not in some way enter the domain of chemistry. Mitchell has it that "many of the most perplexing problems with which the dentist has now to deal, will in due time be solved by the dental chemist." This is unquestionably true, and furthermore, when the dentist takes up the study of chemistry in its application to dentistry with anything like the thoroughness that most other branches of his study are now being pursued, then, and not till then, will he possess that intelligent comprehension of the conditions he is supposed to treat, that will entitle him to recognition as a scientific man.

It is surprising to see how meager is the stock of literature on dental chemistry. Every other special branch of study has been written upon, until it seems impossible to select any one of them that has not been very thoroughly canvassed. If, however, one supposes much is to be gleaned touching the subject of dental chemistry from current periodicals or text books, a trial will bring disappointment.

It is not difficult to account for the seeming disregard for this particular study among dental students, when one considers that there are comparatively few men possessed of that spontaneous passion for investigating the hidden secrets of nature, usually characteristic of the student in chemistry. My experience in class, in laboratory, and in practice, has led me to the conclusion, that, to the average dentist of to-day, chemistry is a sealed well, an unknown, untried and undesired quantity, a useless jumble of incomprehensible equations and malodorous chemicals, too ponderous to undertake, too grimy to be inviting, and too dangerous to meddle with.

Chemistry originated, undoubtedly, in mediæval alchemy. The derivation of the word chemistry is Arabic, and has its root in an Arabic signifying to conceal. However, there is said to be a Chinese document supposed to date from about 2000 B. C., in which is an account of what are called the five elements, earth, fire, water, metal and wood. But as nothing approaching an exact science of chemistry is known to history prior to the last of the 17th and the first of the 18th century of the present era (Becker 1635-1682, Stahl 1660-1734), of what was here meant by the term "element," it is difficult to form a definite idea.

As early as the 16th century, alchemy had developed possibilities that made it apparent there was something of far greater import than the discovery of the philosopher's stone to be wrought out in the investigation of that branch of study; and the first perceptible glimmer of the coming light is recorded by Paracelsus (1493-1541), who wrote concerning the "Black Art," that "the true use of chemistry (alchemy) is not to *make gold* but to prepare medicines." Paracelsus went so far in his investigations as to lay down what is termed the law of the three principles, viz.: Sideric salt, sulphur and mercury, representing the

qualities of fixity, combustibility and fluidity. This hypothesis was accepted by many theorists of his time, but was finally overthrown by the equally incorrect "phlogiston" theory of Hoffman (1660-1742.)

Following the history and development of this embryonic science, we find the next important step occurred about the middle of the 18th century, when Dr. Black studied the specific properties of the various gaseous bodies by aid of the balance, and laid the foundation of quantitative chemistry. But it is astonishing to find, that not until the latter part of the 18th century was it recognized that the presence of air exerted an influence in the formation of chemical compounds, and that the nature of the gases began to be comprehended.

The atomic theory was first suggested by Dalton, (1766-1842).

In 1808, Guy Lussac and A. Von Humboldt discovered the law of the combination of gases by volume, or the law of definite proportions. Thus one volume of H and one volume of Cl unite to form two volumes of HCl. It was left to Berzelius (1779-1848), however, to account the atoms of elements distinct from their equivalents, basing his calculations upon Lussac's law of the combination of gases by volume. By the rule laid down by Berzelius, two volumes of H were recognized as the equivalents of one volume of O. This intrepid student, who also instigated what eventually became the foundation of our present chemical nomenclature, was perhaps the most reliant champion of Nicholson and Carlisle's electro-chemical theories, promulgated about 1800. Berzelius was also the chief supporter of the doctrine of compound radicals.

Though the electro-chemical theory may be said to have been laid by Nicholson and Carlisle in 1800, it was in all probability the outgrowth of experiments by Priestly, in 1775, upon ammonia gas, and by Deiman and Van Froostwijk, in 1789 upon water, by means of frictional electricity.

At the opening of the present century, therefore, we find chemistry scarcely emerged from its embryonic state. To Dumas and Faraday, who were contemporaneous with Berzelius, and those who followed in their footsteps immediately after, are due meads of praise for their efficient labor to promote its development, until chemistry has been brought to such a degree of perfection, that to-day it ranks among the most exact of all the sciences.

But the end is not yet. Its rapid growth during the present century, the wide field still open for study, and the increase in the number and skill of its devotees, augur of a rich harvest of useful knowledge in time to come.

Chemistry, as defined by Henry, is "that science, the object of which is to discover and explain the changes of composition that occur among the integrant and constituent parts of different bodies."

All change in the composition of substances is called chemical

phenomena, and is governed by the laws of atomic and molecular affinity, which is a term applied to the positive and negative attraction or repulsion between bodies acted upon, or that law which holds the elements together in the formation of compounds, or bodies of matter. Without this law, not only would all chemical action be impossible, but nearly all the substances in the material universe would change immediately in their character. "Water would be resolved into two gases, the solid rocks would fall to powder, and animal and vegetable substances would be changed into three gases and a substance resembling charcoal."

Matter is known to the chemist by its molecular formation, and in turn the molecule is recognized by its atomic composition. Only those changes taking place within the molecule, or involving a division of the same, belong to the domain of chemistry.

Change in molecular arrangement does not affect the nature of the substance, the change being physical, and not chemical.

A molecule is a compound of atoms, and the smallest particle of substance that can remain in a free state. Thus the smallest imaginable particle of sugar would be sugar still.

An atom is the smallest particle of matter that can enter into the formation of a molecule; absolutely indivisible, and endowed with an irresistible force that renders it impossible of subsistence singly, or in an uncombined state, and of which all molecules of matter are formed.

As atoms are indivisible, they are of necessity indestructible; when the composition of the molecules of a body is broken up, the component atoms of those molecules immediately combine to form other molecules, according to the law of chemism, or the unsatisfied combining power of atoms.

Substances may change, atoms never. Thus we find two distinct phenomena for consideration; first, the *cohesion* of molecules; secondly, chemism, or atomic *attraction*, which is the true chemical phenomena.

The transformation of any kind of matter into another is effected by chemism; never by any other agency. Heat, cold, pressure, etc., only aid in the process by their effect upon the *porosity* of a body.

Molecules of a body are never in actual contact. By porosity is meant that which separates the constituent molecules of a given substance. Thus heat may facilitate the solution of a salt in water, but no chemical alteration has resulted, only a single *physical* change. It is the same salt and the same water; a protracted application of heat under favorable conditions would give us back both the salt and the water in their original forms.

The terms "atom" and "element" are to all intents and purposes synonymous, and are sometimes used interchangeably. An element is an undecomposable body, whose molecules are made up of one kind of atoms,

like gold and the other metals, oxygen, hydrogen, and all the so-called elements, so far as is now known. It is possible, however, that other atoms now unknown may be discovered in the near future, or even that our present known elementary substances may be found to be but different manifestations of one or two kinds only of primary matter. Indeed, the spectroscope has already disclosed what may lead to the discovery that some, at least, of the elements are rare compounds of less complex bodies. Didymium has but recently been split up into two kinds of atoms, neo-didymium and praseo-didymium. According to the best light of the present day there are seventy known atoms or elements whose molecular composition it has not been possible up to this time to decompose, each with its own relative or combining value, atomic weight, molecular weight, etc. Atomic weight is determined by the theoretical weight of the smallest particle that will unite with or take the place of an atom of hydrogen. Hydrogen being the lightest of the known elements is taken as the basis of calculation, and is written $H=1$.

Molecular weight is determined by the sum of the united weight of its constituent atoms according to a hydrogen unit, which calculation can be made only when the elements are in a gaseous state. The law of Avogadro is that "equal volumes of all gases contain the same number of molecules."

Equal volumes of hydrogen and oxygen do not unite. Taking the composition of a molecule of water for illustration, it is found that it requires two atoms of H to satisfy the combining power of O, to form a molecule of water. Affinity between these two gases when brought together in this proportion, is so strong that they invariably unite to form water, and the reaction is expressed by an equation, $H_2 + O = H_2O$.

A molecule of sulphuric acid, a substance familiar to us all, would be expressed $H'_2 (SO''_4)$, signifying that hydrogen had united with the acid radical (SO_4) in the proportion of two of H to one of the radical, and so on. The several elements differing widely as to their combining proportions, as while it is known that all atoms of the same kind have the same combining power, and that one kind of atoms may have the same combining or saturating power as certain other kinds of atoms, yet it is found as in the above illustration, that an atom of O requires two atoms of H to satisfy its chemical affinity for that element, so that an atom of H is judged to have but half the value of an atom of O. Study of this law, which is perhaps the most difficult of all the theories of chemistry for the student to master, discloses the relative combining value or valence of the several elements. Valence, equivalence, quantivalence, bonds, etc., are synonymous terms—the value of an element being expressed by Roman numerals or dashes placed at the upper right-hand corner of the symbol always taking the hydrogen unit as a basis.

If the atom unites with one atom of H it is called a monad, or monovalent, if with two atoms a diad or bivalent, etc. Thus H' univalent hydrogen, O'' bivalent oxygen.

For convenience, chemical decomposition and reactions are represented by a system of shorthand, expressing the numbers and formulas of the molecules involved in the reaction, and also those resulting by it in the form of an equation. Molecules taking part in the change are placed on the left of a sign = and molecules of the resulting product on the right. Thus, using the equation of a reaction familiar to all of those who have had occasion to make their own "soldering acid," so-called, as follows :

$2 \text{ H' Cl' } + \text{ Zn'' } = \text{ Zn'' Cl' }_2 + \text{ H' }_2$. In this equation is expressed not only the substances placed together, the proportions used and the character of their molecular composition, but also the relative combining power of their atoms, and the product of the reaction, as follows : Hydrochloric acid, composed of molecules of monovalent H' and Cl' is placed in contact with the metal zinc, Zn., which is known to be bivalent or double the value of a molecule of the acid. Two molecules of acid are therefore required. The instant these bodies are brought in contact a change begins to take place. The positive and negative character of the constituent atoms of these two substances begins to assert itself. Chemism between the atom Zn and the atom Cl being stronger than that in the combination HCl, an exchange takes place, and the H passes off in gaseous form, leaving behind zinc chloride, Zn Cl, as a new product. What is true of this reaction is true of all chemical transformations in principle, differing only in degree.

The theory of chemical reaction, the atomic and molecular structure of all material substances and the laws of chemical affinity, as briefly set forth in the foregoing pages, open up the way for the application of this knowledge to the practice of dentistry.

It is well known that the oral cavity has been likened to a chemical laboratory, possessing facilities of material and conditions for a variety of chemical reactions.

Skill in the construction of gold, amalgam, or other fillings in teeth, or in the adaptation of the finest specimens of crown, bridge or plate work, were superior skill in the treatment of all lesions of the soft tissues of the mouth coupled with all of the rest, would not of necessity prepare us to deal successfully or intelligently with an acid condition of the saliva.

First, we should understand the principles of chemical action, and then study the nature of tooth structure, that we may know what phenomena of chemical action we may expect, and the remedy to apply that may arrest its progress.

Lactic acid, the result of the decomposition of saccharine and amylaceous substances, is said to be the most potent factor in the decay of teeth, and most frequently present in acid conditions of the secretions of the oral cavity. It is very easy to detect an acid, but how may we determine its character, so that we may know what will be the result of its contact with the neutralizing agent, and whether the new product will not be as injurious to tooth structure as the acid. If it is not hurtful it is not because of any knowledge of the fact on our part.

The operation of bleaching a tooth is chemical, and an extremely delicate one, involving those intricate laws of attraction and repulsion of atoms referred to in the preceding pages, and should never be undertaken without a knowledge of the chemical nature of the agents used.

The object to be gained is the discoloration of the contents of the tubuli of the dentine, by the use of an agent that will break up the chemical combination of the coloring matter by uniting with, or taking from it one or more of its constituent atoms.

Chlorine is the agent most frequently employed. The well known affinity between hydrogen and chlorine would easily lead us to suppose that if present, H would be the most likely to be given up by the coloring matter, thus producing HCl , which you will recognize as the symbol for hydrochloric acid.

Dr. Kirk, of Philadelphia, has investigated the subject of tooth bleaching from the standpoint of a chemist, and is on record in tones that make no uncertain sound.

The various cements in general use are chemical reagents, and in preparing them for use we perform a chemical operation. It is of importance that one should understand the nature of the elements here brought together, their relative combining value and those conditions most favorable to a free and complete chemical substitution, if one desires anything like uniform results.

A knowledge of chemistry places us in a position to judge of the merits of compounds placed in our hands, like the innumerable alloys urged upon our notice, which may be the most unmitigated frauds for aught we know.

Much has been said and written regarding mercurial sore mouth, from the action of mercury in the coloring matter of vulcanite. Chemistry teaches us how we can decide whether free mercury exists in such proportion, by the use of well known tests.

The process of vulcanizing is chemical. Vulcanite is one of the hydro-carbons united with sulphur. Every dentist is familiar with the process, though recent literature upon the subject seems to indicate there is much yet to be learned in this most common proceeding.

We mix plaster so often that we have come to do it in the most per-

functory manner. We perform two or more chemical operations each time we attempt it. The setting of plaster is a chemical change by which an hydrous calcium sulphate, $\text{Ca}''\text{So}''_4$ is changed into hydrated calcium sulphate, $\text{Ca So}_4 \cdot 2 \text{H}_2\text{O}$. Ca So_4 by the addition of water, is sparingly soluble in water, and imparts that property to water that we call "hard." Those particles which rise on hard water when soap is used, is an insoluble calcium stearate, which continues until the calcium is precipitated. Another chemical action occurs when substances like sal soda, ($\text{Na}_2 \text{Co}_3$) are used to "soften" the water, as follows: $\text{Ca}''\text{So}''_4 + \text{Na}_2 \text{Co}_3 = \text{Ca Co}_3 + 2 \text{Na So}_4$. We all use some agent to bring about this result, though we may not realize that we are performing an experiment in chemistry. Plaster being slightly soluble in water, imparts that unpleasant "hardness" that leads us to resort to some agent to relieve us of the difficulty. Sal soda, for illustration, coming in contact with the plaster in solution immediately exchanges its Co_3 for the So_4 of the plaster compound, throwing down the calcium in the form of precipitated chalk, Ca Co_3 , and leaving a solution of horse salts, or sodium sulphate, Na So_4 , which is altogether a different combination. Now the soap takes hold. This a very commonplace illustration, but it appeals with some force to the understanding of the dentist who uses much plaster.

The study of the electro-chemical plan of this subject presents much of deepest interest to the practitioner of dentistry. Time will not permit us to enter upon its study here. We confidently leave this subject in the hands of Dr. S. B. Palmer, than whom no writer has been more conscientious in his investigations, or more logical in his deductions.

Leaving our subject with you for discussion, we realize how inadequate has been both time and effort in placing it before you, but it is our firm belief that the time is not far distant when we shall have dental specialists in chemistry as well as in medicine. We point with commendable pride to the high standing of American dentistry among the professions, and rejoice at our having reached a stage of our career which leaves little more to be desired from our handicraft. Why may we not with equal profit direct our energies to the cultivation of this comparatively untilled field of study?

Chemistry—scion of mediæval alchemy, born of accident, bred of greed and fostered by desire for the unattainable—how hast thou grown to so great estate! All the powers of earth obey thy mandate. The hidden recesses of all nature open at thy bidding. To thine eye hath been revealed those things which, down the dim vista of the ages, mankind hath sought in vain till thou hast opened the eyes of our understanding. Leave us not, but, leading as thou hast led, we pass from finite to infinite, until we come face to face with the First Great Cause of all.

GLEANINGS FROM THE JOURNALS, AND COMMENTS.

BY EDWIN D. DOWNS, D. D. S., OWEGO, N. Y.

Read at the Twenty-fourth Annual Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, October 25, 26 and 27, 1892.

The paper I am about to read was prepared for the last May meeting of our Sixth District Dental Society, and was written with an object which is set forth in the preamble. It was read at a session at which very few were present. Your Business Committee insisted upon my reading it here, although personally I did not think it was a proper paper to present to this Union Meeting. But at that time it looked as if they were to have very few papers, and it was held that this would introduce many subjects for discussion. Although I had already made some preparation towards a paper of a different character, I yielded to their request. If it seems a waste of valuable time, you must let them share the responsibility with me. The preamble and the closing paragraphs I have allowed to stand just as then read, in explanation of my reasons for writing it. I mention this now, as these remarks were meant for that meeting, and were written after some hard work had been done in an effort to provide a programme.

The title of the paper is "Gleanings From the Journals, and Comments." Most of the "Gleanings" are as then written, but a few have been discarded, and one on methods of root filling added. With this explanation, I begin my paper here.

Before taking up the subject indicated by the title, I hope you will permit me to outline my reasons for writing such a paper. Having had, as you all know, some experience in arranging programmes for this society, I have found the chief difficulty in procuring papers is the idea which men have that they must write something elaborate, scientific and new. If the paper was to go before a body of scientific pretensions, a leader of dental thought, like our American Dental Association, for instance, whose proceedings are published and distributed to the whole dental world, then this might be true.

But we must remember that our societies are graded, and the ponderous thought of a society which gathers its members from the whole country, would be out of place in one whose membership is confined to a few counties, and composed largely of young men. The object of our meeting together annually is not simply to listen to papers, but to compare experiences, modestly stating our successes and frankly confessing our failures, getting in closer touch with our fellows, going home with renewed ambition to make better dentists of ourselves, and to awake us

to the truth that all that is known of preserving teeth is not confined to the four walls of our own operating room, nor even to that of any single dentist, even though it be glittering with nickel-plate and improved machinery, or where beautifully engrossed and framed diplomas hang. While dentistry must make its advance to a liberal profession through the channels of original and scientific investigations, yet its daily work is full of laborious details, whose difficulties are solved by the ingenious rather than the scientific mind.

It often occurs to me, as I suppose it has to many of you when reading a dental journal, that I would like to talk its contents over with some one. Moreover, I often see a suggestion that I try, and find it in my hands a success or failure; when a failure, I do not always know whether the fault lies in me or the method, and I would like to hear of the experience of some one else, but do not always remember it when at our meetings.

Again, some things that I think I will try, in the busy life of our vocation slip from my mind before the opportunity occurs. But some one else may have tried it, and be able to approve or condemn it, for all ideas must stand the test of clinical experience to have their value proven. Therefore, as a part of our meeting, it has seemed to me that a paper of this character should be written every year by some member, and discussed by all, having virtually before us the literature of the year, and while the essayist may present but a small part of it, others will add to it, and possibly we will all read our journals better, and put their teachings more into daily practice for the sake of contributing our mite to the general information.

It is not my intention, and would not be if I had the whole year to prepare my paper, to give you a synopsis of even one dental journal, and so I shall only attempt to call your attention to a few of the things that have remained in my mind from the year's reading, confining myself mostly to practical subjects, otherwise I should occupy more than the whole time allowed for this meeting.

DISINFECTION OF INSTRUMENTS.

While others have spoken words of value, Miller has covered the ground most effectually in an article in the *Cosmos*, for July, 1891, and also in his work on Micro-Organisms. If any one has failed to read his article in the *Cosmos*, he should do it at once, and those who have read it should re-read it, until its teachings are firmly impressed upon the mind. I find it hard work not to quote it entire, but a few sentences and a statement of his results must suffice here. He says, "It is true that there are still some whose appreciation of their duty toward those who commit themselves to their care is so stunted that they insist upon the right

to spread infection by unclean instruments, or fingers that are not absolutely free from germs. Fortunately such men are rapidly becoming fewer, and will not be able to hold out long against the just condemnation of an advancing profession."

He adds later, "We cannot even touch any point in the oral cavity without our instruments becoming coated with a layer of infectious material."

For cleaning rubber dam, he says, the only safe way is boiling for fifteen minutes. Personally, it is a number of years since I washed and again used a piece of rubber dam.

I shall have to refer you to this article for details of his experiments, but his results certainly were surprising. Even concentrated carbolic acid failed to sterilize instruments, after an exposure ranging in some cases as high as twelve minutes. He did find that an exposure of from fifteen to twenty minutes in a five per cent. solution of bichloride of mercury could be depended upon in all but exceptional cases.

Letting alone the risk of injury to instruments, the time required, even with this solution, is a serious problem. But boiling all small instruments, such as are in use in our operating rooms, for three minutes, was found sufficient—forceps require five. The addition of soda prevents rusting.

If one will only make proper arrangements this becomes the easiest, as well as the quickest and most effective means of sterilization at our command.

COPPER AMALGAM.

Last year Dr. Nelson gave us an interesting paper on copper amalgam. But I fear most of us have found its tendency to waste so great, that we have been obliged almost to abandon it, yet I still find that in teeth with a tendency to rapid recurrent decay, especially upon the buccal faces of molars, it seems to be of value. In such teeth, in such places, I have not found that it wastes materially, and I occasionally use it, and would not wish to leave it out of my case.

Another use I make of it is in regulating cases, when I desire to fit apparatus to teeth in a way that has a tendency to mar plaster. I make parts of the cast of this material. It will bear light swaging, can be employed in modeling compound impressions, and can be used over and over again, so that a small quantity kept for this purpose will suffice a man for a life time.

COPPER, IN REGULATING CASES.

Dr. V. H. Jackson presents this in a valuable article in the December, 1891, *Cosmos*, where many simple and inexpensive apparatuses are illustrated. I have used copper in a few cases, and have found, as he says, that food does not decompose under it. I do not know whether the rest

of you have noticed it, but I have, that occasionally teeth have bleached under regulating appliances. I do not believe that they do when copper is employed; and it is asserted that it has been used in connection with clasps on artificial dentures, and has seemed to prevent the destructive action of the clasp upon the teeth.

MAT. GOLD.

The opinions on this material vary as they do on nearly everything we use. A few cases have come to my knowledge in which it failed to give satisfaction, but in those which I have personally observed, it has appeared to me that too large pieces have been used. A dentist buys one single package of this, usually for trial, and quite likely the very first case he gets he tries it, regardless of whether the pieces are of an appropriate size or not. It should be used in pellets that can easily be carried to place, packing at first with rather broad-faced pluggers, with shallow serrations, condensing with finer points. It is one of the rapid working golds, and I think all such must be used with care, but properly employed and in appropriate places, nothing in the form of gold has given me better satisfaction.

In the fall of 1891, I used considerable of it in heavy contour work. Many of the fillings then inserted have been constantly under observation. They seem hard, are free from pits, retain their bright polish, resist mastication, and up to the present time are satisfactory in every respect. I do not use this gold for everything, any more than I use gold itself for everything, but I do use it in a very large percentage of cases. It is very cohesive, yet soft and easily worked, and I think makes contour work possible, even to operators of moderate skill.

I really do not like that last expression, for in my experience the contouring of a tooth is not nearly as difficult as the proper protection of the walls, but the quality of adhesiveness is necessary. I might add that I have used this gold with hand pressure and the automatic and electric mallets, giving great satisfaction with the latter, rather to my surprise.

DEVITALIZATION OF THE PULP.

As familiar as we all are with this subject, it occasionally presents difficulties. One of the valuable features of our last Union Meeting was the papers and discussions regarding it, all of which have since been published in the DENTAL PRACTITIONER of Buffalo, and in the *Cosmos*. Dr. McCall's paper on the use of cocaine for this purpose induced me to test it in practice. After my first case I moistened the crystals with carbolic acid, and I have found that with care and a little time I have been able to remove pulps, causing no more pain than the preparation of a somewhat sensitive tooth for filling.

Possibly if I were a more courageous or skillful man, I might have learned to knock them on the head with a club (the pulps, not the patients), and so found less use for this method.

METHODS OF ROOT-FILLING.

This is an old subject that crops up periodically, and while present methods seem satisfactory in most cases, yet it is one we shall probably continue to discuss, so long as we have pulpless teeth to treat.

I desire to call your attention to an article by Dr. Joseph Head, read before the Oodontological Society of Pennsylvania, and published in the society's proceedings. I am unacquainted with any who are following the practice advocated, although it seemed to me then, and has since, that the method there taught was backed up with such tests as to make it worthy clinical trial and comparison. Any digest I can here make will not do the matter justice, but I will refer any one interested to his paper, and the discussion in the May, 1889, *International Dental Journal*, and the sequel to the discussion in the next number of the same journal. I will quote briefly his words to describe his method: "Put on the rubber dam, remove the dressings, and blow hot air into the tooth until it becomes painful. Then, using a hypodermic syring filled with warm carbolized cosmoline, pump the canals full. In dealing with large canals this will be an easy process. In those of a small diameter the passage of the cosmoline to the apex will be aided not only by capillary attraction, but also by the contraction of the cooling air. By finally pressing a pellet of cotton soaked in cosmoline over the small orifice, and then inserting a minute shred of cotton wherever possible, it seems reasonable to suppose that the canal can be filled to the apical foramen with an antiseptic substance sufficiently viscid to exclude moisture from without. Cotton should then be packed in the large canals to act as a support for the medicament.

"The canals should be filled with cotton to the pulp chamber, and a small pellet soaked in cosmoline placed over the orifices of those which are too small to allow the entrance of a thread. The cavity should now be washed with chloroform to remove superfluous grease, and the pulp chamber filled with gutta-percha or cement. I connect the mouths of the canals with protected cotton in order to expedite venting, should it be necessary. This is merely my personal preference. It is not essential. The filling to be used in covering the contents of the pulp chamber, of course, must vary according to the individual peculiarities of the tooth."

Dr. Head presented with his paper glass tubes filled with cement, gutta-percha, and by his method, which had been tested in aniline ink. All showed leakage except his own. His tubes were objected to, and it was suggested that he draw them to a fine point, file off the point, fill,

and he would get different results. At the next meeting, he presented, not glass tubes, but natural teeth, filled under favorable conditions outside of the mouth. These had been tested as before, and the results were the same. I have never filled a root in the manner he advocates, although I have used to a limited extent, and with much satisfaction, a paste recommended by Dr. Von Woert of Brooklyn, consisting of iodol, oxide of zinc and cosmoline. But this article has always been in my mind, and some things in my clinical experience have seemed to support the assertions of the essayist.

In removing root fillings of either cement or gutta-percha, I have noticed the odor, and although most of these teeth had given no trouble, and were, in some cases, crowned without any further medication than saturation at the moment with an antiseptic, and have continued to give no trouble, yet it has made me question the desirability of these materials for the purpose for which we use them, providing something better can be obtained.

I abandoned my practice rather suddenly once, for six months, on account of a surgical operation. At that time I had many teeth under treatment, which it was impossible for me to fill. These teeth were stopped with marine lint, dipped in a paste of iodoform and vaseline, the root having previously had some of the paste worked into it. The patients were advised to consult others, but many of them awaited my return, and although this was in the fall of 1887, some of those roots have only recently been opened to receive more permanent fillings, for these were only intended as dressings, and they have been filled without subsequent treatment or trouble.

The discussion of the paper seemed to turn on the use of cotton, and not sufficient allowance seemed to be made for the different conditions under which it was used. The roots having been first saturated or filled with carbolized cosmoline, the cotton saturated with the same offered an easy method of filling the large cavity. It was in fact a vehicle to carry and keep it there, and was besides a filling that could easily be removed in case of subsequent trouble. I know many will reply that if the work had been thoroughly done in the first place, retreat would not have been necessary, but whether a necessity or not, it is sometimes a prudent thing to arrange for.

What are the objections to cotton? Is not the principal one the danger of its absorbing moisture and permitting decomposition? Do gutta-percha and the cements absorb no moisture, and do they not allow decomposition? If cotton can be maintained in an aseptic, non-absorbent condition, would it not have advantages as a root filling? Do not understand me as advocating cotton, for I have never used it except as a vehicle, and that mostly in oxy-chloride fillings, and even if I were

to fill roots as suggested I should probably use marine lint instead, believing it to possess some advantages over cotton. It is a lint saturated with tar, and used quite extensively in surgical dressings.

The question now naturally arises, does Dr. Head's method of using cotton prevent absorption of moisture, and thus maintain pulpless teeth in a healthy condition? The only personal experience I have to offer is to repeat what I said a few moments since, *i. e.*, marine lint with iodoform paste has kept pulpless teeth from giving trouble for years, when covered with gutta-percha, although not packed with any such intention, and the covering filling not inserted with the care that should have been given had they been expected to do the service they did.

Cosmoline is calculated, I believe, to resist and prevent moisture entering pulp canals. Cosmoline united with an antiseptic is calculated to prevent moisture entering a root, and to preserve it in aseptic condition if once made so. If this is true, have we not a use for such materials for root fillings?

Personally, I use gutta-percha almost exclusively for this purpose, and with such perfect satisfaction so far as subsequent trouble and ease in working is concerned, that I certainly shall continue to do so for the present, in the larger roots. But there is a class of roots so small and so difficult of access, that I do not feel sure that I have filled them, and here is where this method seems applicable. The ability to take a warm, heat-dissolved preparation and inject it into these roots, appeals to me strongly.

ARGENTI NITRAS.

Probably no paper has appeared during the year that has shown more clearly the patience of the truly scientific mind than that by Dr. Stebbins, in the *International Dental Journal* for October, 1891, entitled, "Argenti Nitras as a Therapeutic Agent in Dentistry."

Here is a man who for six years carefully experimented and recorded his results, who did not rush into print with a half-supported theory, but finally, when time, the great factor in our operations had stamped its approval of his theory, appeared before the societies with his patients and his statistics. Whether one adopts the practice or not, we are bound to commend the spirit of the man. With wooden points and the mouth protected, he paints the cavities in certain cases without removal of decay, and in a large percentage no recurrence takes place. This treatment is particularly applicable to small, sensitive cavities on the buccal and labial faces of teeth, and to stop the progress of decay in the deciduous teeth. Of course its color is objectionable, and it cannot be used when the decay has reached the live pulp, as it will cause pain.

It might be well to mention that he rubs a little amalgam, or silver filings over the decay to take up the free nitric acid, and washes the

mouth freely after the use of the remedy. My own experience with it is too limited to express an opinion founded on observation, but I do believe it is the proper treatment for the deciduous teeth, and will give our little patients and ourselves an amount of comfort that every dentist can appreciate, making the little ones love to come to us, when they may receive relief from suffering without the infliction of pain.

Nowhere, more than here, has the embarrassment that has extended throughout this paper assailed me. How many have read this paper? How many have not? How much do you wish me to tell you of this matter? Or is it so familiar to you that you wish me to stop? These are the questions that have tormented me from first to last. So I will leave the paper with you for discussion. Lengthy as it is, as many subjects as it touches upon, you will all recognize that many of the very good things that have been printed are not recorded here; also that I have touched but lightly upon most of the subjects, partly from want of time and partly for the reasons given a moment since. But you must remember that the paper has been written as an experiment; if it meets with your approval, if bringing before you thus second-handed a portion of the literature of the year for the purposes of discussion and comparison of experiences seems to you to add to the interests of our district meeting, then let us have some one repeat the effort each year, only with more careful preparation. If it does not, stamp it with your disapproval, for it has been written with the sole object of promoting discussion and thus adding to the interest of the meeting. As I write, I am fresh from an opinion of Dr. Barrett's, in an editorial in *THE DENTAL PRACTITIONER*, in which he truly says, that papers are not written for the sake of unlimited taffy, but for antagonism as well as approval.

GENERAL REMEDIES FOR LOCAL DISTURBANCES.

Dentists are so accustomed to depend upon topical treatment for desired results, that they are apt quite to neglect the employment of other remedies. In inflammations of the pulp of an acute character, very frequently more can be accomplished by the use of a hot foot-bath to equalize the circulation, than by all the local remedies in the pharmacopia. A saline cathartic will sometimes work wonders in local inflammations. Diaphoretics, or sudorifics, may be employed with excellent effect, and it is the same with diuretics. In cases in which an acute pain follows the filling of a tooth, the pulp of which was in an irritable condition, a hot foot-bath of twenty minutes duration before going to bed, this to be followed by ten grains of Dover's powder, or an ounce of spirits of minderus, will in very many cases give permanent relief.

GREAT ERAS IN LIFE.

BY W. C. BARRETT, M. D., D. D. S., BUFFALO, N. Y.

An address at the Fifth Annual Dinner of the Chicago Odontographic Society.

When the mariner leaves the shores familiar to him and ventures out upon an unknown sea, he marks his point of departure carefully, observes the time and position, and from that coigne of vantage all the events of the subsequent voyage are reckoned, until he again touches shore and finds a new landmark. All occurrences are dated from some epoch, whether it be in the history of nations or individuals. Wondrous incidents occur, which exercise a dominating influence upon generations yet to see the light, and they form points of departure for the voyage of a world through the great ocean of history.

The very day for this memorable meeting, aye the special moment at which we assembled, was fixed and made definite by its remoteness from the time of the miraculous birth of the God-child in the manger at Bethlehem. One thousand eight hundred and ninety-three years, nine days, six hours and thirty minutes from the time when the Star of Bethlehem cast its era-making rays upon the lowly stable in that Jewish village, was the date that the managers of this feast set for our breaking of bread and tasting of the sacred salt of their hospitality.

Nations have their points of departure—memorable events in their history. England dates her regnant years from the time of the Norman conquest; from the day when the bold barons wrung the Magna Charta from an unwilling ruler; when Nelson broke through the French line at Trafalgar; when Victoria ascended the throne of Great Britain.

Nor is America without her great events. Her annals, though brief, comprise occurrences that have changed the history of the world. We reckon time from the Declaration of Independence; from the adoption of the Constitution; from the date of the Emancipation Proclamation. The first of these taught the world that States are by right self-formed, and not carved out by the sword. The second that men have the right to govern themselves, and that there is no God-given privilege by which kings may assume power. The third forever settled and established human freedom.

It may be seen then, that there are points of departure which are common to all mankind, and that there are others which are peculiar to single nations. So in man's personal history there are great events common to every one, and there are others that belong only to the individual. Let us for a moment consider some of those which affect the physical history of all men. They are great eras from which time may be reckoned. We may trace our progress in life by taking note of them. They are guide-

boards to point out the right way ; lighthouses fixed in the great current of time to warn us from the rocks and shoals that threaten shipwreck. He who heedfully studies their position and bearings, may more confidently hope to glide out into the great open sea of eternity, without having prematurely sunk his craft in the billows and eddies of time.

To enable one to recognize the events which may change the whole course of personal or national history, it is necessary that he study the indications that are always given. The Magicians of the East saw the star that heralded the natal hour of a Messiah, because they were watching by night. By the great mass of mankind the event passed unnoticed. When Napoleon dispersed the National Assembly, he was to all appearance but quelling a riotous outbreak. But it marked the era of Imperialism. The Rubicon was but a small stream, and when the legions of Cæsar forded its shallow waters it seemed but a trivial affair to them. But to Cæsar, who knew its significance, it meant either his entire destruction, or that he would be master in Rome, and sway the destinies of the civilized world.

The great physical eras of life are marked by unmistakable signs to him who is skilled in reading them. Nature never declines to reveal herself to the man who faithfully studies her methods. The changes which take place within the organisms are marked by changes without, and there is no era in the life of the individual that has not its clear and unerring visible token.

It is said that Death once promised an individual that his life should be prolonged for many years, and that three signs of his approach should be given him before the grim messenger called again. In the course of time Death again presented himself before the now aged man, and claimed him for his own. The man demurred, saying that he had been promised a long life, but was answered : " Surely, fourscore years are the fulfillment of that pledge." " But," pleaded the old man, " I was promised three unmistakable signs of your approach." " They have been given," said Death, " and you might have seen them any day for the past year." " But for five years," said the man, " my sight has been dimmed, so that I can see nothing distinctly." " Then," Death answered, " you might have heard them whispered to you at morning and evening." " But," persisted the poor wretch, " my ears have lost their power to detect sound." " Then," said Death, " why have you not heeded the sign that has been given you every day at the table. Your teeth have communicated the warning to you with every particle of food that you have put in your mouth." " But my teeth have long since left me, and my taste is so dulled that I cannot recognize it by that channel," said the man. " Wretch," answered Death, as he touched him with his paralyzing dart ; " By your own admission you have long since received

your promised warnings. Your eyes have become dim, your ears are dulled, your teeth have parted from you. What plainer warnings of my approach would you have?"

In watching for the turning points in our physical existence, there are no organs that tell the tale so unmistakably as those with which it is our special province to deal. They come with the morning of life, they leave at the sunset, and both their advance and retrogradation mark distinct periods in our life's history. At the opening of his course man is without them, because he has no use for them. His food must come to him already prepared. All his organs are feeble and undeveloped. He has not even sufficient strength to hold his head erect. His weak and helpless limbs refuse to bear his weight. He possesses little of coördinate muscular force. His digestive powers are as ineffectual as his muscular system. The pabulum that supports him must be received half-digested, and the mother's milk is alone adapted to his undeveloped stomach. After birth there is a period of rest, which lasts for a short time, when one of active growth succeeds it, for as in the natural world there are alternate periods of activity and rest—the Spring, the Summer and the Winter—so in the physical world there are like times of advancement, and of consolidation of that which is formed.

Six months of slow solidification pass away, and the time arrives when the growing man enters upon another period of existence. The utterly helpless, almost unconscious term is left behind, and the child begins to take note of its surroundings. The upper part of the body is so advanced that it can now hold its head erect. Its vision becomes distinct, and it begins to exercise muscular control. Its intellect shows signs of awakening, and it exercises some of the functions of voluntary life. This new arousing is not entirely a gradual one. It is comparatively a sudden, almost startling change, like that which takes place in the springtide of the year, when a few sunny days see a miracle wrought, the buds swelling and bursting, and all the floral world shaking out its plumage of green.

Is this stupendous change in the infant, this marvelous era in human existence unmarked by outward manifestations? By no manner of means; for coincident with it the first teeth pierce the gums, an outward and visible token, indeed, of an inward and invisible change. The whole digestive apparatus has developed with the rest of the body. The child can now take nutriment that is a little more highly organized; and accordingly the mother's milk, which is its proper pabulum, assumes a new character. There is now more of the fat and less sugar. It would be utterly unfitted for the nourishment of a newly born child, for it has advanced in complexity with the growing organism. The first era of human life is completed, and it is marked by the presence of the first tooth.

Another period of rest and consolidation of that which is formed now succeeds, and the infant makes sure of the ground which it has gained. Six more months pass away, and another period of active growth succeeds, another springtime of development opens. The lower part of the body begins to grow. The brain assumes new functions. The digestive tract takes on fresh powers. The child gets a new stomach, and the mother's milk becomes yet more highly organized. The muscular system attains greater strength, and the helpless baby begins to help itself. A second era as distinct as the first has dawned, and the new development has the same index. The child has reached the age of twelve or fifteen months, and another dental organ is added to the four incisors already in place in each jaw. Helpless infancy is past, and the period of babyhood is gained. The change is a great one, but the era is not as marked as others of our existence. The food must still be half prepared by the mother, and her milk is as yet the only proper nutriment.

Once more does nature demand a rest, and six months again pass away. Then comes another period of energetic development. There is a marked change in the character of the secretions. The saliva begins to contain ptyaline as an ingredient, and assumes a diastatic power. The function of converting starch into sugar is assumed, not in its full perfection, but as yet imperfectly. The villi of the intestines undergo a change in their action. The gastric juice has powers quite unknown to it before. New functions are awakened, and a distinct era in development is marked, as usual, by the appearance of another tooth. The child is now perhaps twenty months of age. It commences to care for itself. It walks; it perhaps speaks with intelligence. It exercises control over its excretory organs.

But the digestive functions are yet far from being complete. Its food must still be prepared for it. Its locomotion is yet uncertain, and the child is subjected to a thousand falls and mishaps, because of the immaturity of its muscular system. Attempts to feed it upon highly organized food result either in continued diarrhoeas and febrile disturbances, or in a permanent weakness of the digestive system, and the growth of a confirmed dyspeptic. All is plainly indicated to him who intelligently watches the course of events. The deciduous denture is yet incomplete. Nature is but preparing, paving the way for a masticatory system. Up to the time of the advent of the latest tooth, none fit for grinding had yet appeared. All that had previously been erupted were but cutters, incisors. It requires the whole apparatus for the perfect preparation of the food, and the denture was but half completed. The teeth that were most essential in trituration and insalivation were not in place, and this fact is indicative of a but partially completed era. The muscular system, the digestive tract, even the intelligence, were in the same imperfect,

unfinished condition. Their advance keeps pace with that of the teeth, and the latter are a sure index of the condition of the former.

But with the cutting of the first of the deciduous molars there is a marked change. As these teeth are the largest of all that have yet appeared, their advent marks a more momentous era. Function is now strengthened; new intelligences are awakened; the stomach has added tone and the power to transform into sugar the starches that form the greater proportion of the human food is materially advanced. This tuberculous molar seems especially intended by nature for the comminution of solid food, and for its proper admixture with a saliva, for I believe the latter function the more important of the two. The diet of the child may now be safely changed. It can digest that which is not already partially digested by the mother. It is in most cases now fully weaned. It begins a more active existence. Its stomach increases in capacity, so that it will hold enough for a number of hours' nutritive purposes. That of the young infant suffices for but a short time. But development as a child is not yet complete, for it lacks something of a full dentition.

Hence another period of slow development is a necessity, and then comes the last of the first teeth, and this marks the close of the period of infancy, and the commencement of childhood. The saliva has become a perfect fluid. The stomach is capable of digesting well organized matter. The muscular system is sufficient for all the needs of the young child. The intelligence is so far awakened that it can begin to comprehend the simplest of abstract questions. The child is complete—as a child. That period of its existence is rounded out. It no longer depends upon the mother for the preparation of its food. From this time, growth is a more gradual process, and the periods between the developmental eras are materially lengthened. Heretofore we have found that there were intervals of about six months between the completion of periods. Now we reckon them by the same number of years.

The stage of infancy has indeed passed, but it is succeeded by another incomplete period. The young human being can walk with facility, but its strides are not those of a man. It can reason, but its mental processes are inductive; it has not arrived at the analytical, or even the synthetic stage. It can digest its food for itself, but that is mainly composed of the carbohydrates, and not of the albuminoid elements. At the end of the sixth year there appears the first of the permanent, as at the end of the sixth month there appeared the first of the deciduous teeth. This is a most important era in life, for now the great liability to these intestinal disorders, the falsely called diseases of dentition, have passed away; not because the cutting of teeth is over, but because the advent of this, the largest and most important of the whole dentition of man, marks the

period when the digestive apparatus is so far developed and perfected, that it can care for the highly organized food with which its infantile organs were unable to cope, but which too often was thrust upon them by ignorant and injudicious mothers and nurses. The terrible mortality of infancy is over. The child has escaped the deadly perils to which a majority of the human family succumb. Solid food is taken, is digested and assimilated, and the growth and consolidation of tissue goes on rapidly.

For another six years there is little change, save that which is incident to a period of steady, though comparatively slow development. Nature is preparing for another grand effort, perhaps the most momentous of our existence. The deciduous teeth, which will soon be insufficient for the necessities of the man, are gradually and by imperceptible processes removed, and larger and stronger ones take their places. Finally, this preliminary work all done, the proper preparations made, nature puts forth a supreme effort, and behold the opening of a new epoch. Now, for the first time sexual characteristics begin to appear. The male separates himself from the female, and begins to assume a new relation to her. The second molar appears. The period of childhood has passed; that of youth, of adolescence is at hand. The larynx is developed in the male, and the voice begins to change. In the female the breasts commence to swell. It is the beginning of the era of sexual development. There are in both sexes indescribable longings and undefined anticipations of the greatest change that takes place in human life. The child is an epicene no longer. Functions hitherto unknown are rapidly awakening. It is a period of unrest, of abnormal appetites, of occasional disturbed function, of unsatisfied yearnings. The desire for food is a constant craving, for the immature being is all animal. The newly awakened passions are undisciplined, and continually lead their possessor into strange adventures. There is no retrospect in the life that now is, but a persistent looking forward to the close of the era when the youth shall become a man, the girl a woman. It is the commencement of the period at whose close the Romans wisely ordained that the vesture should be changed, and the boy assume the manly toga.

Slowly this development continues. Gradually is sexual function progressed. The signs of virility in the male, and of sexual perfection in the female, are perfected and established. Another six years passes away, and behold the last of the teeth appears, and dentition is finally and fully completed. The last, most important period in man's developmental history is finished. Sexuality is complete. He is fully capable of procreating his species, and the female of bearing young. The human being has entered upon the last of the progressive eras of existence. There is no further growth; there is no more of the awakening of new functions, for the round is completed. Man and his dentition have

reached their climax together. Thenceforth there is to be another long period of consolidation, of strengthening of that which formed, of active use of the intelligences now awakened, of the functions already born to man, of treading the highest summit of existence, and then begins decadence.

It is not my intention to follow the life history of man further. Development has ceased. The last grand era has been passed, and it was, like the others which we have considered, marked by the advent of a tooth, that must necessarily be the last. I need pay no special attention to the fact that the progress of this growth in some manner depends upon environments; that these eras, especially the last, are hastened by a warm climate and retarded in the frozen north. That is true of all development. The general law is that when one function is early called into action, all the others are influenced by the same precocity. If the boy or the girl reaches puberty at an unusually early age, the other developmental eras have also been hastened. If the teeth are cut before the usual time, it is probable that the whole digestive tract is in a like advanced condition.

Undue stimulation may cause premature development of organs or sets of organs. These are not, however, evidences of strength, but rather indications of weakness. The intellect, through abnormal conditions, may be awakened too early, and the child may exhibit signs of mental power that should come only with the regular and coördinate growth of the rest of the system. Such precocity will not be accompanied by the usual indications of development in the advent of the teeth, because it is something apart from the regular processes of nature. Unless there be a steady progression, with the ripening of all the powers and functions of the body together, it is an abnormal and unhealthy condition, and the lack of functional symmetry will surely end in a cutting short of the periods of healthy growth, and a final breaking down of the whole, from lack of sympathetic and harmonious action. If the teeth which should mark the advent of the epochs in man's life are erupted prematurely, and in advance of the periods which they were properly destined to indicate, their existence will doubtless be brief, for the ripening of the other functions upon which their nutrition and consolidation depends is insufficient for their support. The teeth that are occasionally found in the mouth at birth are usually soon lost. That man only is the perfect man in whom there is an even balance of the functions and organs. Progression must be synchronous throughout. Undue precocity is as much a diseased condition as retardation. If it be confined to a single organ or set of organs, it means that the disturbed functional activity is due to some untimely stimulation, and that it is at the expense of other organs.

Call up from the misty past the visions of your own experience as dental surgeons, and inquire if they do not in the main corroborate that which I proclaim. Summon as witnesses the instances that you have yourselves observed, in which teeth were cut long before the stated period for their advent, or were unduly delayed after it, and learn if their possessor had a complete and equally developed structure, and if he preserved it to a healthy old age. Were there not neuroses, and an unbalanced mental condition? Was not the physical growth incomplete, the stature low and the muscular system feeble? If not, then has your experience been at cross purpose with mine. It is only of him to whom the natural eras of life have come in their regular sequence, that it can be said that his "age is as a lusty winter; frosty but kindly."

All biographical history but confirms that which I assert. Alexander the Great was said to have had teeth at his birth, and he was a drunkard and a neurotic. Cæsar was born with teeth, and Cæsar was an epileptic. Richard the Third had teeth thus prematurely developed, and he was humpbacked. Where are all the child-geniuses that have astonished the world? Their flame of life burst forth with precocious brilliancy, but it soon went out in death, or early blight and decay of their phenomenal powers. Chatterton, "the marvelous boy, the sleepless soul that perished in its pride," the model of all precocious geniuses, also stands as their type in premature decay. The great eras of life must preserve their relative duration, must be marked by their accompanying outward signs, or the whole sequence of life is destroyed. An irregular dental development usually means an unbalanced physical organization. The healthy mind is found only in the healthy body. Who will not believe that Carlyle might have been capable of even greater things, had not his digestion been ruined by injudicious dieting in his youth, feeding with solid food before his teeth gave indications of the advancement of his digestive functions.

I would that I had the time, and you the patience, to enter upon a consideration of the lessons which we as dentists may gather from a study of these questions. I should be delighted to speak to you about the so-called diseases of dentition, and to convince you, as I believe I could, of the fact that the cutting of the teeth has nothing whatever to do with the virulence of the disturbances that sweep away one-third of the human family before they have reached the age at which the deciduous teeth should all be in position. But I will spare you this, though I am strong in the faith that I could more benefit the human race by teaching this faithfully, than I could by preaching the most astounding dogma that ever religious council formulated.

It is *not* an exaggeration when we declare that the duties which fall to the dentist are among the most important of those entrusted to man.

Disease and pain warp the intellect, and dwarf the understanding. He who allays suffering, works for the better development of the whole human race. "Canst thou not minister to a mind diseased?" asked Macbeth. "Aye," answers the modern dentist. "By my art can I quiet the disturbed organs, soothe deranged function, liberate the mind pent by pain, and bring harmony out of direst discord." In the performance of this holy task in which we are engaged, I can only exclaim with Tiny Tim: "God bless us, every one."

DISCUSSION.

Dr. H. H. WILSON: *Mr. President.*—In the course of the admirable address to which we have just listened, the speaker alluded to the diseases of dentition, and said that if time permitted he should be glad to pursue the subject further. I am sure there is not one present who would not be glad to listen a great deal longer, and I know that I voice the wishes of those present, when with your approval, I request Prof. Barrett to give us something further upon that subject.

President TULLER: Your applause, gentlemen, at the request made by the chairman of the Committee of Arrangements, shows that you are all of one mind, and that you wish to hear Prof. Barrett further. I hope he will gratify us.

Dr. BARRETT: I suppose that this means that you are willing to hear me develop my views on the subject of the so-called diseases of dentition. I will endeavor to be very brief.

My opinion is that their history is like that of the snakes of Ireland; there are none. Not that children do not die during the period of dentition, but I do not believe that they die of teething. Statistics show that by far the larger proportion of the human family perish before they have got all of their deciduous teeth, and the average physician says that the cause is—teething. In my humble opinion this is but the refuge of unthinking, heedless, or incompetent generalizers. The men who assert this may be too indolent or too ignorant to weigh all the factors that enter into the case. It is so easy to attribute the oft-recurring deaths to a hidden, recondite cause, to accept a ready-made diagnosis that shall exculpate the attending physician, and be acceptable to the bereaved family, that perhaps it is but human nature to seize upon it.

And yet, what is the character of these diseases of childhood that are so fatal? They belong to disturbances of digestion and nutrition. They are diarrhoea and dysenteries, and the fevers which accompany them. What influence, except possible reflex disturbances, can the progression of the teeth have upon the digestive tract? If there are disorders caused by dentition, they will necessarily be of the nervous, and not of the

nutritive system. They will not manifest themselves as diarrhoeas, but in reflex nervous disorders. That must be apparent to every physician who makes an intelligent examination of the subject.

I have said that the child gets new teeth because it is at the same time getting a new stomach. The one is but indicative of the other. I reminded you that the undeveloped digestive organs cannot prepare for assimilation matter that is not already partially digested. That the mother's milk, or in its absence the malted or peptonized foods, are the only ones with which the formative apparatus of the young child can successfully cope. And yet, you know how often the infant of six or seven months is fed from the table, with the amylaceous matter which it is utterly unable to convert.

What is the consequence? The ingested material lies a foreign substance in the stomach. The child rejects it at first, because instinct teaches it that it is unfit for use. But the injudicious mother or nurse persists, until after a time an appetite is created, as in later life one for tobacco or whiskey is acquired. When first swallowed this matter is regurgitated without nausea. This method of relief soon fails, and the matter is passed the other way. It acts as an irritant, as are all cathartics, and is hurried through the digestive tract, and a diarrhoea is the result. Continued persistence in giving such food results in a chronic disturbance, or a dysentery, with the fevers which invariably accompany these disorders. They are but the result of the efforts of nature to rid the system of the foreign matter. If it be hot weather the condition is exacerbated, and the child dies of the digestive disturbances, or of the spasms and convulsions which are their reflex sequelæ, or at best survives to become a confirmed dyspeptic, a state even worse than death.

Study the statistics of this or any other great city, and see what are the times of greatest mortality. It will be found that during January, February, March and April, in this climate, the death rate is low, and does not vary materially from month to month. But in May and June there is a sudden jump upward, and perhaps ten times the number of children die in the same space of time. In July and August the death rate drops a little, while in September it takes another upward leap, to fall very rapidly in October, and in November to return to about the level of January and February. More children die in June and September than in all the other months of the year, May or July possibly disturbing the figures.

And yet as many children are cutting teeth in January as in June. Dentition does not advance more rapidly in September than in November. What is the cause of the greater mortality in the one month than in the other? It cannot be teething, because that is constant. My answer is that in May and June come the early spring vegetables, and the

adult members of the family change their diet. Among the poor of the great cities, where the rate of infant mortality is so high, this transition is very grateful after the monotonous table-fare of the winter, and they think it too bad to deprive the baby of that which is so palatable to themselves, and so the little one is fed to its death. Immediately upon the accession of the early vegetables, begins the high death rate from diarrhoeas and gastric disturbances.

Again, in September the fall fruits and vegetables are brought into market, and once more the death rate climbs up. These things afford food for thought, and it is the bounden duty of the dentist to examine into them, and see if it be true that the mere accession of teeth brings such widespread death and disturbance to the human race. We all know that there are almost no irregularities or wide departures from the normal in the deciduous teeth. These are almost exclusively confined to the permanent dentition, and hence we might expect that with the coming of the second teeth the digestive troubles would be intensified, if they are due to that cause. Yet this is not the case, and the reason is, in my opinion, that the era of a more perfect development of the digestive organs has arrived, and that this is indicated by the advent of these larger and more highly organized teeth. I desire to be placed on record as asserting that, were it not for the lack of discernment concerning the so well marked eras of our life, and the consequent check to development which the young child receives, the abnormalities of the second dentition would be far less in number.

To me it seems amazing that these so-called "summer complaints" should so long have been attributed to teething. There is no doubt that occasionally the teeth may form one factor in some disease which seems unconnected with their eruption. But such cases must be exceptional, and can only influence a general disturbance through nervous complications. It is even possible that a delayed tooth may, in unusual instances, affect the digestive tract, but it must be secondarily, and only as the pre-disposing and not the direct cause. I am firmly convinced that the wild tales related by some writers were cases of mistaken diagnosis.

In the very few additional moments which your kindness has given me, I can only direct your attention to these things, and point out to you what a great field for research and observation is here offered us. We can set medicine right in one, at least, of the many blunders which she has made. We are not bound down by any antiquated traditions, or tied to any inherited creed. The whole domain is ours to explore *ab initio*. We shall not be true to ourselves or our profession, if we refuse or neglect to examine these matters for ourselves, from the standpoint of our own professional experience, and in the full glare of that illumination which our special opportunities for study afford us.

EDUCATION.

BY H. J. BURKHART, D. D. S., BATAVIA, N. Y.

Read at the Twenty-Fourth Annual Union Dental Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York, held at Binghamton, October 25, 26 and 27, 1892.

The subject of Education, in its various aspects, is one in which we as a profession are deeply interested. From the educating of a student through all the different channels until the so-called finished product is delivered at College Commencement, to the proper enlightenment of those in other walks of life who at some time or other come to us for service, are things which cannot be ignored.

For several years it has been the custom to devote a considerable amount of time at society meetings to a discussion of Dental Legislation. The combined energy of the profession has been exerted to solve the problem, but as yet no appreciable progress has been made towards securing uniform dental laws; so whatever I might offer in that direction would do no good, or bring about an earlier solution of the difficulty. I invite your attention briefly to a phase of the question of education which has been little touched upon by our writers and speakers, namely, that of establishing or setting in operation a definite plan or plans of educating the people. The woeful and lamentable exhibitions of ignorance encountered in every-day practice, regarding the simplest and most ordinary rules for a proper observance of common laws of health, in the care of the teeth, should at once appeal to every practitioner and enlist his aid in bringing about a radical change. This cannot be done in a moment, nor without considerable effort. The returns may be late in coming in, but when they do you will find a rousing majority on your side, the more thorough respect and endorsement of your patients and better looking purses.

Not long ago I was asked to speak on Dental Hygiene, at a County Teachers' Institute. The thought at once struck me that right there was the place to begin our missionary work. You all know that at stated times each year institutes are held in every county in the State, and every teacher is obliged to attend these meetings. They are usually presided over by the School Commissioner for the district, who is assisted by the Department of Public Instruction, Institute conductors, and teachers in Normal Schools in the immediate vicinity in which the meeting is held. Questions of physiology, hygiene and sanitation are discussed, and to those the care of the mouth and teeth should be added. A text book, or something of that sort, ought to be prepared and placed in the hands of every instructor. Reputable dentists could easily be induced to deliver

short talks, which would be exceedingly entertaining and profitable. From the institute, go to the common school, which is the pride of our land, and there set aside a short time each week to instil in the minds of the children the necessity of the regular and proper care of their teeth. If some plan could be decided upon to appoint inspectors to ascertain the condition of children's mouths, and then see that the recommendations are adopted, it would not be long before a great change for the better would be noticed. I am aware that the last suggestion rather partakes of the nature of "rainbow chasing," but as that is a pleasant occupation for many this fall, you will pardon the infliction of my little "rainbow."

The health authorities look after everything but teeth, and yet we all know that direful results follow the neglect of them. In the larger cities, where we have dental infirmaries, poor people might be sent. Of course, any attempt to influence people to go to any particular man, or set of men, would at once meet with intense opposition, and that is where the weakness of the proposition lies. But first educating the teacher, then the pupil, and through the pupil the parents, will be a tremendous step in advance.

There are many operators who consider themselves competent to instruct their patients while doing the necessary work. My acquaintance being somewhat limited doubtless accounts for my not knowing any such. It is not reasonable to suppose that the little talks we have with patients will do the work. Something else must be done. It is a well-known fact that the higher in the scale of life you go, and the more intelligent your patient, the easier your work and the greater the satisfaction if your efforts are appreciated.

The District or State Society might call the attention of the Department of Public Instruction to this question, and with their assistance devise some good way of accomplishing the desired result. The President of the Dental Societies could be given power to appoint representatives from the profession to be present at all important gatherings of educators. By wise and careful selections, the flower of the profession would be brought to the front, and a new interest awakened among the people. To a considerable extent, members of the society would receive public recognition, not in an advertising sense, but as broad-minded, public-spirited, professional men. There would be a distinct line drawn between members of societies and the cheap advertising division in our ranks, which would largely do away with the prejudice that seems to exist in the minds of some, with reference to joining our organizations.

I venture to say that if people should be educated sufficiently so that they can discriminate between good service and fair prices, and ordinary service and low prices, the occupation of the cheap advertising concerns,

which is such a stench in the nostrils of reputable practitioners, would soon be over.

We must do more to enlighten and instruct the people. Any plan that will accomplish the result is what we are looking for. I trust that these ramblings and fragmentary observations will have a tendency to bring out a full expression of your views on this interesting subject.

UNION DENTAL MEETING

OF THE

SIXTH, SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE
STATE OF NEW YORK, HELD IN BINGHAMTON,
OCTOBER 25, 26, 27, 1892.

Concluded from page 38 of the January number.

Dr. H. J. Burkhart, of Batavia, read a paper upon "Dental Education. (See page 81.)

Dr. F. H. LEE said there was a lamentable amount of ignorance of dental matters among the people generally. He thought there should be a pamphlet prepared, which the dentist could keep and furnish to his patients gratuitously, and which should give reliable information as to the care of the teeth. This would be taken home and read by different members of the family, and frequently referred to. If it contained the information which it ought, it would prove exceedingly useful.

Dr. W. C. HAYES said there was a prevalent opinion that the first permanent molar was a deciduous tooth, and that it was to be shed in due time. This was because it was erupted soon after the last deciduous tooth, and before any of them were shed. As a consequence, there were few parents who gave it any attention, or who thought it worth while to send the child to the dentist until the tooth ached, and then it was apt to be too late. A pamphlet like that suggested by Dr. Lee would be of great benefit, but it should emanate from a society, and not be issued by individual dentists, because they would be almost certain to use it as an advertising medium, and because there were few who could prepare it so that it would not convey false information.

Dr. C. S. BUTLER said that popular lectures in schools would meet with a great deal of opposition from dentists who did not deliver such lectures, and the one who did would be accused of advertising himself. The proper place for the dentist to convey information was in his own office. He should impress the necessity for cleanliness and proper hygienic precaution upon every one who visited him. Then this patient

will in turn become a teacher, and information will be widely diffused. Children should be taught to wash their teeth as much as they would to wash their faces, for it is of a great deal more importance. If this could be secured, there would be much less need for the dentist's services.

On motion, the subject was passed.

A paper was read by Dr. A. M. Holmes, upon

THE ADVANTAGES OF NITRATE OF SILVER IN DENTAL PRACTICE.

(This paper will be found in full, commencing on page 21 of the last number of this journal.)

The discussion was opened by Dr. R. H. Hofheinz, of Rochester, who said that shortly after Dr. Stebbins, of Massachusetts, read his paper upon this method of practice, he had met Dr. Holmes and had asked him if he had ever used it. The answer was that he had, for forty years. Since commencing its employment the speaker had filled a less number of children's teeth than formerly, and had better results. His practice is to wash out the cavity after the use of nitrate of silver, paint its surface with a solution of Canada balsam, and fill with gutta-percha. He has one method that may be new. In the distal cavities of posterior teeth one cannot always apply nitrate of silver without danger of injury to the soft tissues. In such cases he uses silver wire dipped in nitric acid.

His experience is that after using nitrate of silver there is no immunity to shocks from thermal changes. He therefore inserts a layer of gutta-percha before putting in a metallic filling.

Dr. M. D. JEWELL: I have never used nitrate of silver, but have been favorably impressed by the paper, and propose to go home and give it a good, faithful trial.

Dr. S. B. PALMER: I have had experience for a number of years, but since the late discussions of the subject I have used it more than ever. It is in harmony with chemical laws, and like sulphate of copper on wood, it makes the teeth immune to caries.

Dr. F. H. LEE: To remove the stain of nitrate of silver from the fingers, if the spots be touched with iodine and then with ammonia, they will disappear. I have used nitrate of silver to a limited extent, and believe that it is an excellent prophylactic in dental caries.

Dr. E. D. DOWNS: If a tooth is irritable after using the nitrate, it should be washed out with salt water, as this will remove the free acid which causes the tenderness or irritation. I have used nitrate of silver to overcome the sensitiveness sometimes met in buccal cavities. The surface of the cavity is first cauterized with the crystals, and then an amalgam is rubbed into the cavity. It is surprising how closely it will cling to the surfaces.

Dr. A. M. HOLMES: If it is desirable to introduce the silver nitrate into a root canal, heat a platinum wire and the crystals will adhere to it and may be carried anywhere. I have used this material so long and so frequently that it has ceased to be remarkable to me. I have told of it so often and to so many that I cannot recollect who they are, or rather to whom I have not told it.

Dr. F. E. HOWARD: I have used the silver nitrate for years in the treatment of superficial decay. The method that Dr. Holmes has recommended, that of incorporating it into gutta-percha and thus introducing it, is invaluable. I have rubbed soft amalgam upon the surfaces touched with the nitrate of silver. This seems to intensify the action. It stains the tooth deeper and protects it better.

Upon motion, the subject was passed.

THURSDAY MORNING'S SESSION.

The following communication was received from the Broome County Medical Society, which had been holding its regular annual meeting. The resolution was introduced in that Society by Dr. J. G. Orton, and was passed unanimously:

Resolved, That we most cordially extend the hand of friendship to the members of the Dental Association now convened in this city. That we recognize the honorable position which dentistry has attained as the result of the high standard of preliminary education, and the thorough course of study required by the schools and colleges of Dental and Oral Medicine and Surgery.

LEROY D. FARNHAM,

Sec. Broome Co. Medical Society.

The communication was received with loud and continued applause. The following resolution was unanimously adopted, and the Secretary was directed to send a copy of it to the Secretary of the Broome County Medical Society:

Resolved, That the Sixth, Seventh and Eighth District Dental Societies, in Union Convention assembled, receive with assurances of high esteem the resolution of professional regard and fraternal consideration from the Broome County Medical Society, and that we offer to that Association our sincere appreciation of their courtesy in extending this evidence of professional good-fellowship.

A paper was read by Dr. E. D. Downs, entitled

GLEANINGS FROM THE JOURNALS.

(See page 65 of this number.)

Dr. F. W. Low said that he heartily commended the paper. Such an one should be prepared and presented at each annual meeting. As regards the sterilization of instruments, his practice is to wash them

in boiling water. The heating of them in an oven is altogether too slow a process.

He had used cosmoline into which iodol had been worked, but had abandoned the practice because he had found that it discolored the tooth. The method of extripating pulps under the influence of cocaine in his practice, had been followed with such excessive hemorrhage that he had returned to the old method of killing with arsenious acid.

He had tried the method recommended by Dr. Bödecker, of devitalizing the coronal portions of the pulp with cobalt. The result had been a very severe tooth-ache for three or four hours. After this, the pulp in the pulp chamber was dissected away with a sharp bur, and the cavity washed out with a one-tenth-per-cent. solution of corrosive sublimate. Tin was then burnished into the cavity, coated with wax and an amalgam, filling inserted. The coating of wax was to prevent the combination of the mercury with the tin, and so destroying the integrity of the cap. The advantage claimed is that the dentine is nourished by the stump of the pulp left in the root canals.

Dr. W. A. BARROWS said that he had used copper amalgam, but in his hands it had been a complete failure. It had discolored and cupped out upon the surface, and had been a great disappointment to him.

Dr. F. B. DARBY said that although much had been said against copper amalgam, yet he must say that in his practice it had arrested decay and saved the teeth. It was true that in some instances it had become cupped upon the surface, yet upon the whole it had behaved very well in his hands, but it was necessary to use a great deal of care and caution in inserting it.

Dr. C. A. ALLEN said that he did not believe it possible to destroy a part of the pulp and have the rest remain in a good physiological condition. It did not seem reasonable. Cobalt will destroy a pulp, but it will not exhibit any selective qualities, nor will it stop just at any point marked out.

Dr. A. M. HOLMES said that when copper amalgam became brown or black, that was an indication that it was a good filling, and was preserving the tooth. When it remains bright, it almost invariably cups upon the surface, or is washed away. The permanence of the operation depends upon the manipulation and mixing of the filling. When it fails it is because it is made too dry. It takes a certain amount of free mercury to produce perfect crystallization. It should be used with an excess of mercury, and if a little precipitated silver be mixed in that improves it.

Dr. E. D. DOWNS said that he had intended to throw out that part of the paper referring to copper amalgam, because enough had been written and said upon the subject already. Excessive hemorrhage from the

removal of a pulp can be contracted by the use of peroxide of hydrogen, or by hamamelis, or witch hazel.

Dr. A. P. SOUTHWICK said that when copper amalgam was first introduced he had employed it largely, and hoped great things from it, but it had proved a disappointment, and he had abandoned its use.

Upon motion, this subject was passed.

A paper was read by Dr. M. D. Jewell upon

DENTAL CHEMISTRY.

(See page 57.) Dr. W. C. Barrett was called upon to open the discussion. He said that no one could exaggerate the importance of a comprehension on the part of the dentist of this very important subject. Every one should have a clear understanding of chemistry—if he could fathom its mysteries. For himself, the speaker said, although he was on the run constantly, he could not keep abreast the positions occupied by the chemists. To his apprehension, so far from being an exact science, it was the most inexact of all the studies which professed to be founded upon demonstrated truth. Within his recollection the system of nomenclature, upon which all comprehension of it is founded, had been radically changed three times. When he first commenced its study in the higher academical course, there were but forty-two simple substances. Now there are above sixty. Consider how much this has added to the domain of chemistry.

For centuries the chemists of the day referred everything to the four great elements, fire, earth, air and water. The necessary corollary of this was the old phlogiston theory. These have been abandoned for later hypotheses, and those of to-day may be overthrown to-morrow. When the speaker first attempted to learn the laws which govern the union of the elements in compound substances, and to study chemical affinities, catalysis was the great bugbear. That was defined to be the power which one substance had to bring about chemical changes by its mere presence. There was no idea of what was fermentation, or what was the nature of a ferment. To be sure, Schwann had discovered the true character of the *Torula*, or yeast plant, but he was appalled by the magnitude of the revelation, and dismayed at the completeness of the revolution in chemical science that seemed imminent. He had not the courage of his convictions, and so lost the opportunity to be the greatest scientific reformer of modern times.

For many years Liebig, by the sheer force of his intellectuality and the power of his dominant genius, held the scientific world in thrall. It was not until the time of Pasteur that man broke the shackles of tradition. Since that time chemical science has made wonderful progress,

for the real cause of many of the molecular changes has been better understood. But many of the theories maintained at this day are very crude. The laws of nature when comprehended are always found to be very simple and uncomplicated. Some of the admitted chemical theories of to-day are so complex and involved that they seem out of harmony with all that we know of fundamental truth. They are inconsistent with each other, arbitrary, contradictory, improbable. It cannot be that we are very near the complete solution of the great secret of nature concerning the synthesis of matter.

When he was a boy, and began the study of physics, or natural philosophy, electricity was considered an entity—a separate force. More than that; there were two distinct kinds of electricity, a positive and a negative, and these were at constant war with each other. Now we have learned that electricity, like light, heat, and chemical affinity, is but one exhibition of a great unit force; that all force is one, as all matter is one, only differing in its mode of manifestation. Chemistry has not yet got into line with this demonstrated fact—or at least the majority of those who claim to be chemists, and whose deductions are about as inconsequential as those of the famous negro divine who loudly proclaimed that “the sun do move,” have not done so.

Chemistry, then, or the chemical theories of those who claim to be its exponents, is at the present day about the most inexact of the sciences. We hear in our societies the most absurd theories promulgated, and claimed as the only Simon-pure, Old-Original-Jacob-Townsend expositions of unadulterated, double-distilled Chemical Science, with a big S.

Does this absolve us from the duty of trying to make chemistry something that shall be in harmony with the laws of nature? By no means. It but adds to the obligations. The essayist is right. As dentists we have not paid the attention to it that we ought. Chemical themes should form the basis of more of our papers and discussions. We should strive to become competent to take up so-called chemical laws, and examine them carefully and intelligently. The selection of his subject by the essayist is to be highly commended, and it is to be hoped that in the discussion someone will be able to throw the light upon it which the speaker confessed his inability to do.

DR. F. B. DARBY said that he was not a chemist, and could not pretend to speak with authority upon the subject. But he was glad to see an awakening interest in the matter, and hoped that others would follow the example of the essayist, and bring before us papers which should open up chemical laws for discussion.

DR. A. OSGOOD said that under the law of rotation which governed the place for holding these union meetings, the next would be held with the

Seventh District Society, which would be the host for the occasion, the others being the guests. He wished to extend to every member of the District Societies a most hearty invitation to put in an appearance at Rochester next year, when they would meet with a fraternal welcome. And he desired to make this invitation special to the members of the Fifth District Society. He was glad to see so many of the members present at this meeting, but next year he hoped that they would come as a society, and not as individuals. It grieved him to think that one of the four sisters was absent, though her children were there to aid by their counsel and advice. At Rochester, next autumn, he hoped that there would again be an unbroken family, and we would have such a re-union as would keep our hearts warm through the entire ensuing year.

The invitation was received with great applause, and upon motion the meeting then adjourned to meet in Rochester a year hence.

CORRESPONDENCE.

AMERICAN DENTISTS IN EUROPE.

Editor Dental Practitioner and Advertiser.—For many years American dentists practicing in Europe have been generally recognized as operators far advanced in their specialty, but in few instances have they been honored with official positions in the dental societies or schools of learning in foreign countries. The University of Berlin gave Prof. Miller a chair in that institution, which he has filled with great credit, and his reputation as an authority in bacteriology is world wide.

The present presiding officer of the British Dental Association, Dr. Henry Clay Quinby, is a native of this country, born and educated in New England, and has acquired a large and first-class practice in Liverpool, where for many years he has been located. Dr. Quinby has published several works on dental practice, in which he has advocated conservative principles, and shown an eminent degree of sound common sense in what he has written. In his inaugural address, Dr. Quinby paid a deserved compliment to that class of American dentists who, by faithful study and persistent effort, have won for themselves an honorable position in the field of dentistry, but emphatically condemned a class of incompetent pretenders, who take advantage of a reputation earned by others to parade themselves before the public as "American dentists."

We congratulate President Quinby on the honor conferred upon him by his English confreres, who evidently appreciate his professional worth, as evidenced by his promotion to the highest office within their gift.

Sincerely yours,

C. E. FRANCIS.

A PRACTICAL HINT.

Editor Dental Practitioner and Advertiser :—Properly to treat pulp canals requires that the saliva should be kept out of them, and this is sometimes very difficult when the cavity of decay extends above the gum line. In such instances it is impossible so to adjust the rubber dam as that moisture will not creep in. These troublesome cases have caused to many much trouble and annoyance.

When the cavity is dried thoroughly—and it will require some time and patience to do this—warm a piece of gutta-percha of suitable size, and pack it into the bottom of the cavity until it fills the whole to a point above the line of the gum margin. Apply the rubber dam as soon as it is cold, and with a hot instrument remove that part which fills the pulp chamber and obstructs the entrance to the canal. It will require care to do this without disturbing the rest of the filling, but it can be done if the instrument is used hot.

This will form an effectual barrier against the intrusion of saliva when the rubber dam is in place. The gutta-percha is to be left in position until the treatment is done. If it is necessary to put in more gutta-percha to seal up the cavity during the periods between visits, adherence to the gutta-percha barrier is prevented by anointing the latter with vaseline. I have had so much comfort from using this device that I cannot refrain from giving it for the benefit of my brethren.

Yours very truly,

OLD PRACTITIONER.

REFINING GOLD.

Editor Dental Practitioner and Advertiser :—There are two oversights in the article on the above subject in your January issue. It is quite unnecessary to heat the scrap to remove grease, and it is also equally unnecessary to use a magnet, either to scrap or filings before melting. The proper treatment is to boil in strong nitric acid, using an enameled iron dish. Nitric acid destroys the grease, dissolves iron, copper and lead, if present, and reduces the tin to an insoluble oxide, which, if not washed away, combines with the flux. The use of nitrate of potash, or corrosive sublimate, is a costly luxury, and should never be necessary if nitric acid is used.

The recommendation as to the use of dilute sulphuric acid for the removal of tin filings is evidently an oversight, as this metal is unacted on by sulphuric acid in the cold. It is, as stated above, reduced to oxide by nitric acid, but this oxide is not soluble in either nitric or sulphuric acids.

Very sincerely yours,

WARRINGTON, ENGLAND.

THOMAS FLETCHER, F. C. S.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, EDITOR.

BUFFALO, N. Y., APRIL, 1893.

OUR JOURNALISTIC AIM.

It is pleasant to receive letters of commendation, even though one knows that he but half deserves them. Such an one from a subscriber to this journal lately gave us gratification, though like the graceless wasp it carried a sting in its tail. After detailing some of what it considered the excellencies of the PRACTITIONER, the letter warned the editor not to introduce too much science, but to give plenty of practical matter.

We feel like taking issue with our correspondent over this question. In a previous number we endeavored to show that only science was practical, because every practical idea or process must be founded upon established law, and science is the knowledge of law. But we do not desire to split hairs, and we will not affect to misunderstand him. He intended to warn us against presenting matter which might not be comprehended by some. He wished for articles that required little of thought; that did not call for study on the part of the reader; that were mere re-presentations of old themes; elementary instructions in matters of mere technique; commonplaces; recipes.

Well, the PRACTITIONER does not aim to be that kind of a journal. It leaves newspaper formulas and patent perscriptions to those who can find nothing better for their pages. Whenever it can learn of a new process that promises good results, whenever it can discover an idea that is not absurd and inconsistent with itself, it will seize upon it with avidity, but it does not propose to mislead its readers by giving them what it knows, if it knows anything, is but arrant nonsense.

The duty of a journal is to enlighten and instruct its readers. But what kind of illumination is that which merely befogs them with false and impracticable, because unscientific, information? Or what kind of professional journalism is that which pitches its key-note below, or even on a level with that of its average reader. If a man is not to improve constantly, what is the excuse for his existence? If he is to know no more of his profession at the end of the year than he did at its commencement,

how is he to keep pace with the world? If he is to make no advance, he might as well be a post set in the ground.

Man never gains in knowledge by studying the things which he already knows. He must take up that which is new to him to-day; and on the morrow, when that has become familiar, he must advance yet another step. If a journal fulfills its office, it will thus lead him on and on until he arrives at the comprehension of the most abstruse abstract principles.

The case of a dentist of good average intelligence comes to mind at this moment, who twenty years ago had not the slightest conception of the principles involved in the management of a tooth with a dead pulp——and he has not now. He still goes on applying arsenic to a tooth that is abnormally sensitive, filling it and trusting to luck. If it causes subsequent trouble he extracts it, and puts in a rubber plate. He knows there is something wrong in his practice, but he does not believe in dental journals. He is eminently one of those who has no time for reading. He cannot afford to buy books. He is poor, and he will always remain so, for his practice must necessarily be confined to people as ignorant as he himself is, and such patients are never willing to pay reasonable fees.

Had this dentist taken a good journal at the outset of his career, one that tempted him to higher ground, and had he faithfully studied and endeavored to comprehend it, to-day he might have been in the enjoyment of a practice among intelligent people, and have been able to earn something more than the wages of a mere artisan.

No! the PRACTITIONER will still try to give in its pages food for earfiest thought. It will strive to make of its subscribers better practitioners in the line of intelligent advancement. Not altogether by the study of bacteriology and tooth development, though it will endeavor to give its readers enough of these to keep abreast with the times, but by well considered articles on mechanical principles and every day practice. It will not knowingly engage in false teaching, by publishing that which is untrue and misleading.

THE COMING CONGRESS.

Not infrequently the most meritorious enterprises have more to fear from their friends than their enemies. This seems to be the unfortunate fate of the World's Columbian Dental Congress. Injudicious partisans seem determined to advertise it into insignificance. If it is to be anything worthy the name, and worthy the attention of the dentists of the world, it must accomplish something for scientific progress. A mere aggregation of the rag-tag and bobtail of dentistry, even though it may be numbered by the thousand, will not make a meeting of which we may

be proud. Yet this seems to be the summit of the ambition of many men who really desire the success of the Congress. It appears to be their conception of what a great professional meeting should be.

Unfortunately, too, some of these men are in positions in which they can make the most noise, and they have been industriously occupied in whooping and halloing in advance, and making wild predictions of the crowds of dentists who will be in attendance at Chicago, until they have tainted the whole affair in the minds of some.

It should be understood that these enthusiastic but mistaken individuals do not voice the sentiments of the better part of American dentists. The latter do not approve these spread-eagle tactics in connection with a scientific meeting. It savors too much of the methods of the advertising empirics. This is not to be a gathering of dental quacks, who shall use the occasion for advancing personal interests. It is not to be converted into a great circus, with clowns innumerable, and it is time that the "greatest show on earth" aspect was relegated to the background. The dentists of America wish a meeting that shall be creditable to them as a profession. They want one that shall be fruitful in ideas, and that shall mark an era in true professional advancement.

There has been too much of individual posing before the eyes of the world. Personalities have been pushed forward too freely, and that has given the impression that the thing is being managed in the interests of cliques, and that it is a congress of the politicians in dentistry. Some of our good editorial brethren have allowed their zeal to run away with their discretion, and have been publishing biographical sketches of the great men, with laudatory accounts of what great wonders they have done. This is in execrable taste. It places the individuals themselves in a false light, and subjects them to the charge of prostituting their positions to personal aggrandizement. If any personal history is to be given to the world, let it be at the end of the meeting, when the men have covered themselves with glory by carrying to a successful issue a meeting in which brains, and not sounding brass, occupied the first place.

Those who really have the best interests of the Congress at heart are hard at work trying to secure papers worthy the occasion, and the attendance of men who can intelligently discuss them, well knowing that without these the meeting will earn only the derision and scorn of the scientific world, even though the attendance should be sufficient to pack the biggest tent of the biggest circus that ever exhibited before the public. These men are not thrusting themselves into public notoriety. Their names are scarcely heard, but they are doing the work that will make the coming Congress a credit to us, if anything is to do so. But it will require a great deal of tact and firmness on their part if they prevent an inundation of second and third rate papers. The ones who

volunteer essays are not always the ones who have something to say. They are the men who desire to reap some personal benefit from the Congress. They are anxious to get a paper accepted, that they may have the fact blazoned in their local papers, and thus use the meeting to advertise themselves. We think it was a mistake when volunteer papers were called for. The best writers should have been selected, and their contributions invited. We do not wish such a flood of absurdities as has deluged great meetings in this country before now; wishy-washy papers which any discriminating editor would have rejected at the first reading.

We sincerely hope for the sake of an occasion which should mark an era in professional affairs, that too enthusiastic editors and others will restrain their vehemence, and cease to give currency to the impression that a scientific congress is to be only a great show, in which the lions will be on exhibition, to be occasionally stirred up until they roar for the edification of the spectators. They mistake the import of the occasion, and belittle the Congress in the eyes of the only men who can make it worthy the attention of the world.

May we venture upon another criticism without danger of wounding the susceptibilities of any one, or of being deemed hypercritical. We sincerely trust that the Executive Committee has sent out the last of the long lists of names for publication. If there is any dentist in America who has not been thus posted in the public prints, he can afford to rest content in the distinction that this gives him. There is no excuse for burthening the mails with these directories, except that it may minister to a vanity that is becoming a disease among us. The meeting and its results are everything, but mere men are nothing.

This journal has received from the Executive Committee lists of names sufficient to fill a number. It has published none of these, and will publish none. Its space is too valuable to be given up to such matter. But whenever there is anything which will subserve the cause of real professional advancement, whenever there is any matter that is of professional interest, or which will tend to place the Congress in its true light, as devoted to the advancement of the scientific aspect of dentistry, it shall have the most conspicuous page within its covers, and shall be given in full, even to the exclusion of all other matter.

Let no one mistake the situation. The meeting is not to be devoted to matters of detail, nor is it to be run in the interests of any clique. Those who are really laboring to advance its higher interests cannot help it if the unwise misinterpret its scope, and try to give a false impression of what is being accomplished. There is a sincere desire on the part of the better class of dentists to make it inaugurate a higher appreciation of what really constitutes good dentistry, and from that era to date a new advancement in professional culture and scientific attainments.

QUIZ COMPENDS.

The publication of series of questions and answers by teachers in our schools has its drawbacks. The students are usually anxious to obtain them, because it relieves them of a great deal of labor. But it is apt to be at the expense of thoroughness. If a teacher makes a summary of the topics which he will lecture upon, in the form of a series of questions, and gives the answers to them, the members of his class will commit them to memory, and in his quizzes and examinations will seem wondrously ready with their responses. But a little questioning outside the series which they have learned, will convince any one that there is no comprehension of basal principles.

The object in teaching is to inculcate a general knowledge of the subject, and not to load the mind with mere verbiage. The student should be trained to think for himself—to reason concerning conditions. In actual practice he must make his own diagnosis, and this requires a knowledge of the laws which govern pathological conditions. It is very easy for the student to learn the condensed answers of the quiz compends to the question as to what treatment should be adopted for the pyogenic fever which accompanies alveolar abscess. But that gives him no inkling of the character or symptoms of that condition, and he would perhaps be no more ready to diagnose it than one who had never studied the subject at all. The same would be true of other diseases, and so the one who was readiest in his answers when under examination, might be no more fit to enter upon practice than he who has never attended a school.

The tendency of these publications is toward a superficial, inadequate smattering, instead of a thorough study of principles, because the student finds it a short-cut to a diploma, and will almost invariably choose it in preference to the more tedious road to real knowledge. It encourages that glittering bane to all true progress, the doctoring by recipes and specifics. The teacher who publishes his quizzes, with the answers, will find that the students will cut his lectures and trust to his compends, and as a consequence, though they are ready with their parrot-like answers, will be woefully ignorant of that which they should know best.

The writer of this during the past winter wrote out a thorough system of questions and answers, covering the subjects of his lectures before his class, and turned them over to his adjunct for quizzing during his absence. Some of the students were permitted to take the papers for study, and they made copies of them. The whole class petitioned for the complete list, that they might have it published, and a favorable answer was returned. It was at once found that nearly every member stopped study, and stood waiting for the appearance of the compend, intending to trust to that

when the time for examination came. The evil tendency became apparent in time, and the questions were promptly withdrawn, with the result of an immediate change in attendance and attention.

It will be noticed that the objection is to the publication of the answers to the questions. This does not apply to the mere furnishing of the queries, provided the student is obliged to obtain his own answers, for that stimulates study.

But there is a great temptation to the publication on the part of the teacher. The whole will make a respectable volume, and the professor finds his name in the list of authors without having given himself much extra trouble, or finding a necessity to furnish one original thought. It is authorship made easy, but at the expense of all that which the conscientious teacher desires to accomplish.

THE TEETH DURING PREGNANCY.

The belief is very common among dentists that the teeth of women suffer during gestation, because of the needs of the growing organism. That in some way the teeth of the mothers are robbed of their lime salts, to supply the demands of the fœtus. We cannot but think this a grave error.

For a long time the late Dr. John Allen annually presented a paper before some dental body, devoted to an exposition of the wrong done by the millers in bolting flour. He reasoned after this manner: The teeth of Americans are notoriously bad. Those of the savage tribes are as notoriously good. The gluten of grain lies next the bran. The Americans bolt this out that they may get flour that will make white bread. Savage tribes do not do this. The bad teeth of our people are due to a lack of this bone-making material in their food. Hence the millers of the country are responsible for our bad teeth.

This was ingenious, but it contained a number of serious errors. Perhaps the most important of these lies in the second predicate, for it is not true that aboriginal or savage people have good teeth. On the contrary, some barbarous tribes have worse teeth than Americans.

Again, while it is true that the gluten of our cereal grains is especially rich in the phosphates, it is not true that fine flour is without sufficient for all the needs of man. The following computation has been made: If rice flour, which contains as little of the phosphates as any other common food, were the sole nutrition of a pregnant woman, and if she consumed barely enough to maintain a healthy existence, she might obtain from that alone double the amount that would be needed for herself and the growing child. It is well known that women always excrete phos-

phates during gestation. Fine wheat flour contains more of the bone-making elements than does rice flour; hence it cannot be that our bad teeth are due to lack of the proper material in our food.

The corollary to the hypothesis so long held concerning the nutrition of the teeth, naturally was that the lack of lime salts in the food must be artificially supplied, and hence the many preparations of calcium that were formerly urged upon the people. The truth is, that under no circumstances can the animal organize the inorganic. That function rests solely with the Vegetable Kingdom. All of the inorganic elements of the body must be derived from organic sources. Hence it is the wildest kind of vagary to prescribe any inorganic material for nutrient purposes. It cannot be built into the tissues, and must invariably be excreted if taken into the animal system. No inorganic matter was ever yet accepted and built up by any animal organism. Such elements may have their uses in the system, but it must always be as medicines. Their presence may induce structural changes through their medicinal action, but they themselves are never used for trophic purposes. It follows, then, that the giving of any form of the phosphates, in the expectation that it will be used in nutrition, is the result of ignorance of physiological law.

To go back, then, to the cause of the decay of the teeth during pregnancy. It cannot be due to the lack of the proper ingredients in the food, provided the mother has sufficient of that which is wholesome. If the nutrient processes are in a healthy state, they will find plenty of material out of which to build bones and teeth. Besides, if there were a scarcity of the lime salts, why should it manifest itself in the teeth alone. Or, being felt, why would not the number of teeth be diminished instead of the quality? Why might it not be that there are but four toes, or fingers, or why should not some bone be deficient in length, or size, if the material proved insufficient?

But that the teeth of the mother should be robbed of their lime salts to help out the foetus, seems to us the most absurd of theories. There could be but one way in which the tooth could thus be depleted. There must, in that case, be a solution of the salts and their taking up by a system of absorbents. But there are no such absorbent vessels in the tooth. It is true that under certain circumstances a tooth may be absorbed, but when this is done the whole of the tissue goes; it is taken up into the system by absorbent vessels, whence it is excreted. To secure this result a special system of cells is developed—the osteoclasts—and these do the work. There are no such, or any other, absorbent cells in the hard tissue of the tooth, and hence there cannot be any such absorption.

There is no doubt that the character of the tooth tissue changes with its nutrition, or mal-nutrition, but not through any such process as that

sometimes claimed. No, the expectant mother neglects her teeth. She has sufficient upon her mind to make her forget the tooth-brush. She goes to bed with her attention fixed on other matters, and her teeth are neglected. She awakes in the morning, perhaps with nausea, and she is in no mood to brush her teeth. Besides, her appetites are apt to be capricious, and she deranges her stomach by improper food, or possibly it sympathizes with the gravid uterus. The secretions are perhaps changed, and these morbid conditions add to the trouble. Her nutrition is interfered with, and the teeth are not properly nourished. All these things produce their natural result in caries of the teeth, and the etiology is traced to her condition, and that is made the primary cause, whereas it is only secondary.

Let the mother keep up the hygienic precautions usual with her under other circumstances; let her clean her teeth often and carefully; let her food be sufficient and wholesome, and her nutritive processes be in good condition, and there is no reason why her teeth should especially decay during pregnancy, or why their nutrition should in any way be interfered with.

“COVERING.”

The English dental law provides for a registration analogous to that under some of our State laws, but the method is widely different. The registry of qualified dentists is kept by the General Medical Council, and is controlled by them, although there is usually one or more medical men practicing dentistry upon the board. Hence, trials which affect dental registration must be before the Medical Council.

One difficulty that has been experienced under our State laws has confronted our English brethren, and to overcome it they are obliged to appeal to the Medical Council, which has not hitherto shown a very commendable alacrity in grappling with it. We refer to what the English call “covering,” or the practice of an unqualified man under cover of the name of, or as managing assistant to, one who is upon the dental register. The evil has become widespread in Great Britain, and an appeal has been made to the Medical Council so to administer the dentist’s act as to prevent this. The Council with true medical stupidity cannot be made entirely to comprehend the real merits of the case, but the petition has not been positively rejected, and there is a possibility that time may so enlighten the medical men as to allow them to see what is so urgently demanded. Reform is of slow progress in England, although it must be admitted that when it does come it comes to stay.

The law passed by the New York Legislature a year ago makes some provision for what was fast growing into a gigantic evil in the State. A

system of branch offices has in numerous instances been established by some men with more enterprise than loyalty, which covered a stretch of territory more or less broad. In each of these would be installed an unqualified practitioner, who would either work for definite wages or would pretend to, the business being done under the name of the qualified head. This would evade the law, and the unqualified man could continue in what was really an illegal practice. But the last amendment has provided for this, and henceforth we may hope for a cessation of the practice.

PECULIARITIES OF ALLOYS.

It is astonishing what a change in some metals the presence of a minute quantity of another will produce. Of all those so affected probably gold shows the greatest physical changes. All dentists are aware that foil from the same manufacturer, and produced by the same process, will not always be the same. It will exhibit at times very strange characteristics when the attempt is made to work it. Nor is this always the fault of the maker. If the dentist leaves it where it can be subjected to the action of volatalized substances, its working properties may be materially changed. In the laboratory, a bit of strange alloy may be introduced into the crucible when melting, that shall make it unrecognizable.

The addition of one per cent. of bismuth would render a piece of plate unworkable, as it would perhaps crumble in swaging. Lead acts in the same way. One part of the latter metal in two thousand parts of gold reduces its tenacity from eighteen tons per square inch to five tons. Such a bar of gold can easily be broken with the hammer, and the color is changed to an orange brown. The remarkable changes which the presence of a mere trace of some other substance will produce in gold, stimulated the alchemists of the early Christian centuries in their attempts to find something which would give to base metals all the characteristics of gold. This was the true secret of the supposed philosopher's stone.

Copper is another metal the properties of which are thus easily changed. Electrically pure copper is soft, flexible, and dull in sound. A mere trace of silver makes it, when hammered or rolled, elastic, hard, and sonorous. The presence of one-tenth of one per cent. of bismuth in the copper of a cable entirely destroys its commercial success, by reducing its conductivity. One one-thousandth of antimony changes the best copper cables into the worst conceivable. The copper cables of to-day will carry twice as many messages as those of a generation ago, through improved processes by which purer copper can be produced.

Iron also is extremely sensitive to the presence of certain other substances. By the addition of two-tenths of one per cent. of carbon, steel

is produced that will make excellent boilers or bridges, but which would be entirely unfit for knives or weapons. If eight-tenths per cent. of carbon is introduced, the steel will make a capital razor, but it would be quite useless for rails, or for the construction of bridges. If a mere trace of magnesium be added to iron it will be impossible to make a magnet of it, and it cannot be hardened by dipping it in water after being heated to redness.

Hammered palladium foil will absorb, at the temperature of boiling water, six hundred and forty times its own volume of hydrogen gas, but a foil made from the fused metal will absorb only sixty-eight times its own volume.

Pure zinc will not be dissolved in pure hydrochloric, or pure sulphuric acid, but if the slightest trace of metallic salt be introduced the reaction sets in at once. Dry chlorine will not combine with dry metallic sodium, but a trace of moisture will start the reaction immediately. Carbon dioxide is not absorbed by dry lime. Dry sulphuretted hydrogen does not tarnish dry silver. Dry iodine does not decompose dry sulphuretted hydrogen.

If oxygen be rendered perfectly dry, combustion is impossible in the gas. Hence, if there was not aqueous vapor constantly in our atmosphere, combustion would probably not take place. These chemical facts are sufficient to account for many of the strange phenomena that metals sometimes exhibit in the laboratory.

CONCERNING CORRESPONDENCE.

The Dental Cosmos is undeniably and indisputably right in criticising the babbling, tattling, personal gossip contained in the letters of some journalistic correspondents. They have been a source of annoyance and irritation in professional circles for some time, and self-respecting journals should not give place to them. Legitimate professional news, and dignified, unbiased comments upon professional events, prepared by competent writers who have a speaking acquaintance with Lindlay Murray and his successors, are quite in accordance with proper journalism. But personalities, and impudent impertinences concerning private matters with which the public has nothing to do, should be left to the cheap and nasty sensational newspapers, which make a dirty living by invading the sanctities of private personal life. Our reputation as a learned and dignified profession depends very largely upon our journals. When one of them becomes an offender in this direction, the others share the reproach if they do not openly and unreservedly condemn it.

BIBLIOGRAPHICAL.

NINETEENTH CENTURY SENSE. Being the Paradox of Spiritus Sanctus and of Rosicrucianism. Second edition, 1893.

MAN AND HIS WORLD, OR THE ONENESS OF NOW AND ETERNITY. A series of imaginary discourses between Socrates and Protagoras. By John Darby. (Dr. J. E. Garretson.) Philadelphia: J. B. Lippincott Company, 1890.

There are few men who, reading the professional treatises of Prof. Garretson, or listening to his instructive, precise and methodical lectures before his class, could connect him with the philosophical, imaginative, Platonic John Darby, the author of the two books now under notice. There are thousands of professional men who believe themselves acquainted with the renowned surgeon, and who indeed have a fair conception of him as such, but who are utterly ignorant of the charming philosopher, the delightful metaphysician, John Darby. Read the clear, concise descriptions of his methods in some of his daring operations in surgery; then take up a chapter in his abstruse and occult "Nineteenth Century Sense," and see if the imagination can fancy their being written by the same hand. Listen to his clinical lectures at the bedside, or in the operating amphitheatre, and then peruse a chapter of the famous "Imaginary Discourses," and see if there is anything in common between them.

And yet there is the same graceful, and even dainty diction, the same easy, onward flow of thought, the same clear and cogent reasoning in both. But the abruptness of the change in method, the almost startling dissimilitude of subject amazes one, and he inquires, can this be the exact, precise, literal, unimaginative author of "The System of Oral Surgery?" How many phases of mind does he not present; what versatility of genius does he not exhibit.

Twenty years ago, as the author says in his preface, he first published "Two Thousand Years After," being a continuation of the imaginary conversation between Socrates and his friends upon the immortality of the soul, as related by Plato. "Two Thousand Years After," the conversation that was interrupted by the fatal bowl which Socrates was condemned to drink, was revived in the light of the further knowledge derived from the centuries. In "Man and His World," Prof. Garretson has added still more to the work which was so warmly received when first published. It is impossible here to say more than that it is worthy the subject, and seems to form a fitting sequel, written in the light of Christianity, to the imaginary discourses of the immortal Plato. In Part Second, "The Philosophy of the Eternal Now," there is a whole system

of modern occult science, in which the author makes clear many a metaphysical mystery of existence.

"Man and His World," contains as a frontispiece a portrait of Prof. Garretson, which alone is worth the price of the book to any one who is an admirer of the author—and who is not?

The first edition of "Nineteenth Century Sense" was issued six years ago, and the present writer then gave it the most careful attention of which he was capable, in the journal of which he was at that time the editor. He found it mystical and recondite, as is that which formed the subject matter of the book, modern Spiritualism. This second edition is re-written, and much of the obscurity of the former volume is cleared up. Not that the author has made the transcendentalism of spiritualistic dogmas clear—we do not know that such was his aim—but the book is much more readable, and presents a far more complete system of soul philosophy than did the former edition.

This is not the place, nor is the present writer the person to offer an analysis of the book. We can only say that it is charming in its conception and in its diction. It is just the volume for the contemplative man to take up on a quiet Sunday spent among the works of nature. No one can read it without being lifted out of his grosser ego, and feeling that his very inmost nature is being whitened, purified, uplifted. The closing chapter, the "Spiritus Sanctus," is the summing up of the whole, and like that of the Ecclesiastic of old it resolves itself into "Fear God and keep his commandments;" not the mandates of mere man, claiming to voice the unfathomable, but the law of the infinitely beneficent Creator, which any observing man will find written in characters of living light upon all the works of Him whom to know aright is life eternal.

HUMAN ANATOMY. A complete systematic treatise by various authors: Including a special section on Surgical and Topographical Anatomy. Edited by Henry Morris, M. A. and M. B., London. Philadelphia: P. Blakiston, Son & Co., 1893. Royal Octavo. Cloth, \$7.50.

At last we have an anatomy that meets all reasonable expectations. For many years Gray has been the accepted standard among students, and it has been urged that it was sufficient for all needs, because human anatomy does not change. But there have been changes in the methods of teaching. There have been great changes in the art of engraving, and in the general character of illustrations. In these, Morris' anatomy seems unapproachable.

The different subjects were assigned to separate authors, each an authority in himself, and to this subdivision each has given his best efforts. The chapters on Osteology were written by J. Bland Sutton; on

Arthrology, by Henry Morris; on Myology, by J. H. Davies-Colley; Blood Vessels and Lymphatics, by Wm. J. Walsham; The Nervous System, by H. St. John Brooks; The Eye, by R. Marcus Gunn; The Tongue, Nose, Ear, Heart, Voice and Respiration, by Arthur Hensman; The Organs of Digestion by Frederick Treves; Urinary and Generative Organs, by William Anderson; and Surgical and Topographical Anatomy, by W. H. A. Jacobson, Each of these gentlemen is eminent in medicine, and each has done his work well.

The book contains nearly thirteen hundred pages, and almost eight hundred illustrations, two hundred and fourteen of which are in colors. It is in this department that the work specially excels. Every medical student knows that it is impossible to obtain a clear idea of the anatomy of any part by mere description. Only the actual dissection and the best illustrations can make it wholly intelligible. The former cannot be kept at hand, and hence the student or practitioner must depend upon illustrations. Those in the work of Mr. Morris are unrivalled, so far as our knowledge goes. Especially are those printed in colors wonderfully clear. Not only are the blood vessels represented in their natural colors, but other tissues are printed in separate tints. The outlines of the origin and insertion of muscles are represented in colors, so that it is impossible for the duller student to fail of comprehension.

It would be a labor of love to describe the book at even greater length, but the whole would be comprised in the words, "The most satisfactory and comprehensive Anatomy issued." The type is clear, the arrangement excellent, while the cuts are works of art. It is a work of supererogation to predict for it a wide and long-continued acceptance as a standard authority. It cannot avoid it.

ELEMENTS OF CHEMISTRY AND DENTAL MATERIA MEDICA. By J. S. Cassidy, D. D. S., M. D., Professor of Chemistry and Materia Medica in the Ohio College of Dental Surgery. Cincinnati: Robert Clarke & Co., 1893.

This book is written from the standpoint of the dental teacher, and while it makes no pretension to originality of method, it has accomplished something in the way of making plain to the dental student some of the mysteries of this mystical science. It sets out with a brief study of some of the elementary principles of physics, and in a condensed form presents foundation facts. From thence it proceeds to a consideration of the synthesis of compound substances, and the laws which govern the combinations of the simple elements.

As the present graded system of all reputable dental schools divides the course into three distinct annual sections, the book follows this in being divided into three parts. The first is principally devoted to the

elementary laws of physical science, the second to inorganic, and the third to organic chemistry, thus leading the student on by regular gradations to the study of the more abstruse principles.

We make no pretensions to the chemical knowledge of an expert, but the book bears upon its face the impress of simplicity and conciseness, and we should think is well adapted to the needs of dental students. Coming as it does from one who is so well acquainted with the wants of the dental schools, and who is withal such an accomplished teacher himself, it could not well fail of being worthy adoption as a standard dental text book in all our colleges. It may be obtained from the author, at Cincinnati. Price \$2.50.

A PRACTICAL TREATISE ON ARTIFICIAL CROWN AND BRIDGE WORK. By George Evans. Third Edition. Revised and enlarged, with 631 illustrations. Philadelphia: The S. S. White Dental Manufacturing Company, 1893.

That the third edition of this standard work should be called for in about four years, proves its popularity and value. Crown and bridge work is the outgrowth of but a few years, but in that time it has grown into a special method of practice. It was its misfortune that almost at the outset it fell into the hands of unprincipled men, and became so tainted with quackery of the basest description that it was ignored or discarded by many of the best and oldest practitioners. It is rapidly finding its way into its proper place, and must, within certain limits, form a part of the practice of every progressive dentist.

Such works as that under notice will go far to remove the prejudice which has existed against crown and bridge work in the minds of many, and will reduce it to legitimate methods. Dr. Evans is known as an expert, and his methods and devices are amongst the most simple and effective yet presented. His directions for procedure are concise and plain, and can be followed by any dentist possessed of a fair degree of skill and intelligence. It is needless to commend the book to practitioners, for it has already taken its place as an essential in the library of every one who makes claim to thorough and comprehensive practice.

HISTORY OF THE LIFE OF D. HAYES AGNEW, M. D., LL. D. By J. Howe Adams, M. D. With fourteen full-page portraits and other illustrations. In one large Royal Octavo volume, 376 pages. Philadelphia: The F. A. Davis Co., Publishers.

Viewed from almost any standpoint, Dr. Agnew was a great man. He was not of those who exhibit ability in one restricted field alone, but his character was rounded out at all points. As an operative surgeon, he was original, intrepid, skillful, yet conservative. As a writer, he was clear and lucid, yet concise, and at times almost epigrammatic. As a

teacher, he had the happy faculty of imparting information in such a way as to insure its comprehension, and at the same time so to impress it upon the mind that its retention was easy.

This book of his life was written by one who could comprehend all that was best in Dr. Agnew, and it is a faithful portraiture of its subject. It is made more valuable by containing extracts from some of his lectures and writings which have not before seen the light. To those who have set under his teachings, or have read his writings, or better still, have known the man in his private and social life, the book will come like a message from the dead, so faithful, so tender, so appreciative of all that was best in one whom to know was to love.

Typographically, the volume is a work of art. Type so beautiful and so clear is seldom seen in a book of this kind. It is a pleasure to read such an one, aside from its contents.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY
for 1892. Published by B. H. Catching, D. D. S., Atlanta, Ga.

The compiler of this work was widely known in dentistry as the editor of the *Southern Dental Journal*, and as such proved himself possessed of that somewhat rare intelligence which enables one to comprehend that which is of special import, and to condense into few words the essential ideas of a long article. He abandoned the field of regular journalism to commence the annual condensation into a single volume of the cream of the literature of the year. In this work he has met with signal success, the annual issues having been received with great favor by dentists everywhere.

The volume for 1892 is fully equal to any of its predecessors, and really contains an epitome of the practical suggestions of dental journalism for the year. At the price of a single monthly journal, there is furnished the practical information for the laboratory and operating room of them all. To the man whose time for reading is limited, it will prove invaluable.

**THE ANGLE SYSTEM OF REGULATION AND RETENTION
OF TEETH.** Third Edition. Revised and enlarged. The Wilmington Dental Mfg. Co., Philadelphia, 1892.

Dr. Angle's devices for use in regulating teeth are too well known to demand any explanation at our hands. This pamphlet of fifty pages is devoted to their description and illustration. We do not believe that any single system should be adopted to the exclusion of all others, but certainly any dentist who practices at all in orthodontia should become familiar with the system of Dr. Angle, for it presents many points of great interest, which are fully explained in this pamphlet.

CURRENT NEWS AND EXCERPTS.

THE BUFFALO DENTAL SCHOOL.

Early in February the Dental Department of the University of Buffalo moved from its temporary quarters into the new University Building, corner of Main and High Streets, where it occupies the whole of the western wing. It is believed that no school of its kind is better housed. Only half of the wing was at first set apart for the Dental Department, but the number of students making application caused a change in the plans and the giving up of twice the space that was at first thought sufficient.

The building is a beautiful one, and it was planned especially for the medical, dental and pharmacal schools. It is built of brick, with terra cotta ornamentation, and is thoroughly sanitary. There is no plastering or plaster ceilings, the side walls being finished directly upon the pressed brick of different colors, and the ceilings showing the supporting beams. The heating and ventilating are of the most modern description, and altogether the building is said to be the finest in America devoted to such purposes.

The Dental Department has been organized with a view to the thorough teaching of practical work. Its Faculty is divided into separate staffs for this purpose, and clinics are made a distinct feature, every Saturday being exclusively devoted to them. In the morning a medical clinic is held at the General Hospital, but a few steps away, while at eleven o'clock Prof. Park holds a surgical clinic at the same place. The material is usually abundant, and the dental students attend both.

In the afternoon, dental clinics are held at the Dental Infirmary, and these are both operative and mechanical. Some special field is set apart for each day, and the best man procurable in that department is secured, and to that special object alone does he give his attention. Practitioners are invited to attend these, it being thoroughly understood that they must not usurp the places which of right belong to the students, but must take the rear seats. The management of these clinics might perhaps be advantageously copied by dental societies. The list of those given since the commencement of the year is appended, to show what subjects are covered by them:

Jan. 7.	Dr. C. A. Allen.	The Use of the Electric Mallet.
" 14.	Dr. H. B. Meade.	Making and Baking of Porcelain Crowns.
" 21.	Dr. T. S. Phillips.	Making and Adapting Gold Crowns.
" 28.	Dr. B. F. La Salle.	Swages, and Swaging Aluminum.
Feb. 4.	Dr. G. B. Snow.	Forging and Shaping Steel Instruments.
" 11.		Moving into the new building. No clinics.
" 18.	Dr. B. F. La Salle.	Soldering and Adapting Aluminum.
" 25.	Dr. G. B. Snow.	Tempering and Pointing Steel Instruments.
March 4.	Dr. C. E. Francis.	Operations for Children.
" 4.	Dr. William Carr.	Surgical Pathology of Fractures and Dislocations.
" 11.	Dr. V. H. Jackson.	The Construction of Apparatus in Orthodontia.
March 18.	Dr. C. F. W. Bödecker.	The Rotary System as an Adjunct in Filling.
March 25.	Dr. G. W. Melott.	Crown and Bridge Work.
April 1.	Dr. R. H. Hofheinz.	Cylinder Fillings.
" 8.	Dr. H. B. Meade.	Continuous Gum Work.

Dr. Geo. J. Frey, with others of the teachers, has also given occasional clinics. After April 8th reviews and examinations will be in progress, and clinics will be suspended.

Regular Faculty meetings are held every Monday evening, and all teachers are expected to be in attendance. At these each is in turn called upon to give an account of

the work accomplished during the past week, the attendance at the lectures, clinics and infirmary practice, the progress made, with suggestions as to possible improvements. In this way the whole Faculty is enabled to work as a unit in the perfecting of the teaching. To these Faculty meetings the members of the Board of Curators are especially invited.

DEATH OF DR. GEORGE WATT.

In Xenia, Ohio, February 16th, there died one who has exercised a wide and deep influence upon dentistry. Dr. George Watt has for many years been known as a trenchant writer and editor. He was born in 1820, and upon arriving at man's estate practiced medicine for some years, but in 1852 commenced the practice of dentistry. He was for some time the professor of chemistry in the Ohio College of Dental Surgery. With Dr. J. Taft, he published the *Dental Register* for many years, and was active in dental society meetings. His health was such that he was obliged to retire from active practice nearly fifteen years ago. In 1881 the *Ohio Journal of Dental Science* was established by Ransom & Rudolph, of Toledo, and Dr. Watt became its editor, remaining in charge of it up to the time of his death. Associated with him in his editorial duties for some years was Dr. L. P. Bethel, who will succeed him as editor of the *Ohio Journal*.

THE QUACK'S PARADISE.

A Connecticut State officer says no medical license is required in that State.

The only requirements are that the man must appear to be thirty years old, and act as if he was possessed of ordinary common sense. This letter was written by a Connecticut State official to a medical student who wanted to know whether he could practice medicine in the State upon his registering his name and the college from which he graduated. It will best illustrate the 'snap' whereby anybody can tumble into a professional berth yielding many dollars and cents.

"SIR: Anybody can practice medicine in Connecticut. You need not register, you need not present a medical diploma; you need not know opium from peppermint; you need not, indeed, know anything. You can simply come and live here and begin to practice.

"The laws of the State will sustain you in collecting your fees for professional services, if you render any which you choose to call such. But if you undertake to carry me or my trunk to the depot for pay, you must get a license; if you peddle matches or peanuts you must get a license; if you collect the swill from your neighbors to feed your pigs you must get a license. You can practice medicine in Connecticut without a license."

NATURAL GAS.—Now that natural gas is being so extensively introduced for fuel and general heating purposes, it should be known that it is unfit for the dental laboratory. It can be employed properly enough in vulcanizing, and for most purposes, but it cannot be used to advantage with the blow-pipe. The reason is that it contains but little carbon. It is well known that illuminating gas owes that property to the fact that the fine particles of carbon become incandescent in the flame, and give light. When the Bunsen burner is used, sufficient of air is admitted entirely to consume this, and hence there is great heat, but no light. Natural gas containing but little carbon, when the blast from the blow-pipe is used there is no heat. It may be artificially carbonized by adding that substance, and then it will give light, and with the blow-pipe heat. If any dentist introduces natural gas into his laboratory, he will be wofully disappointed if he expects to use it for all laboratory purposes.

DR. W. W. ALLPORT.

One of the foremost men in dentistry is no more. Dr. W. W. Allport, of Chicago, passed away March 21, and will be known among us no more forever. He was one of the pioneer dentists of the West, and for many years has exercised a wider, deeper influence in professional matters than almost any man of his locality.

He was a born leader. His great natural ability, his professional skill and acquirements, his wide experience, ripened judgment, with his entire devotion to his profession, placed him in the lead wherever within professional circles he moved. His pronounced views on questions of the day, his natural positiveness and decisiveness in expressing them, his earnestness of purpose and his undaunted courage in the face of opposition naturally wrought antagonism, but no man whose impulses were honest, and who really knew Dr. Allport, ever believed him actuated by other than the most noble of purposes. The personal opposition which he sometimes encountered was the tribute that little minds and narrow comprehension paid to his greatness.

Those who knew Dr. Allport best loved him best. It is a great deal to say for a man of his prominence, that he enjoyed the respect even of those who were at times arrayed against him. Any man who rises to a high position must necessarily become the target for the dirty missiles of the meanly envious and little minded men who cannot appreciate his greatness. Dr. Allport was not exempt from these venomous attacks, but he was too generous to seek revenge, too magnanimous to harbor malignity. His death leaves a great gap that will not soon or easily be filled.

Professionally he was possessed of wondrous skill. A full generation ago, when beautiful operations were more rare than now, he was famous for his manipulative ability. Patients sought him from far and wide, and he was the acknowledged great operator of the West. His influence was always for good, and there was no one who did more for the cause of dental progress, who loved his profession better, or who was more ready to be sacrificed for it than Dr. Allport. His name will long be cherished in professional circles, and will continue to breathe a perfume, the fragrance of which will linger while dentistry has an existence.

ABOUT CLAMPS.

"Never put a clamp on a tooth if you can get along without it. Why? Because below the margin there is a sensitive membrane which is so easily irritated you can do irreparable injury."—*Extracted.*

There are two of them, kind sir, but we are at a complete loss to know how either is to be irreparably injured by a clamp, in the adjustment of which half-way ordinary care is exercised. There is the mucous membrane, but no one will contend that this can be referred to. Then there is the peridental membrane, but that will not be hurt unless the clamp extends below the margin of the alveolus, and we cannot see how that could well happen. The probable truth is that the above paragraph is one of those exceedingly sapient remarks made by men who really know nothing of dental anatomy.

THE BUFFALO DENTAL SCHOOL—Commencement Day of the University of Buffalo will occur this year on Tuesday, May 2d. The medical, pharmacal and dental graduating exercises will be held together, the Chancellor of the University conferring the degree in each course. The Curators of the Dental Department will meet in the morning, and spend the day in the examination of the candidates, the successful ones being recommended to the Council, which will meet before the graduating exercises in the evening, for the purpose of awarding the diplomas. All who are interested in the cause of thorough dental education are invited to be present.

COMMITTEE ON EXHIBITS.—The Committee on Exhibits for the World's Columbian Dental Congress desires to obtain rare specimens of growths, abnormalities, casts, illustrations of methods, instruments and appliances, both ancient and modern, whereby the growth of the profession may be shown from its early infancy up to the present time. They also desire to exhibit an ideal library, operating room and laboratory, and to this end earnestly request all members of the profession, together with dental dealers and publishers, to loan them any specimens, instruments, appliances, books, photographs or pictures of societies and eminent men of all countries, together with anything and everything that will be of interest to any dentist from any part of the world. They will pay all transportation charges on such exhibits to Chicago and return, and will insure the same while on exhibition if desired. Address all communications to Dr. A. W. McCandless, secretary, 1001 Masonic Temple, Chicago, Ill.

THE NEW YORK DENTAL SCHOOL.—This new aspirant to popular favor is announced as about to open a spring session in New York. The moving spirit in its organization is Dr. G. Lenox Curtis, formerly Dr. Geo. L. Curtis, of Syracuse. Its incorporators seem to be others than dentists mainly, as aside from the G. Lenox Curtis, there are but two whose names are recognizable. It is reported that the Faculty is not yet complete. Also that the school has from the Board of Regents of the State of New York only a license to teach. They cannot examine for diplomas, that function being reserved to themselves by the Regents. There certainly is abundant room for another college in New York City, provided it be properly organized and conducted by competent and level-headed men.

"MUCHAS GRACIAS."—The editor of this journal is under greater obligations than he can readily express to Dr. H. W. Howe, of the City of Mexico (formerly of Kansas), for something which he will value above gold. It is an excellently well preserved skull of one of the ancient Toltecs of Mexico. The type is analagous to that of the Mound Builders—dolicho-cephalic—but is proportionally better developed in the cerebral region. Although it is that of an adult, the cranial capacity is exceedingly small. The dental development is magnificent. Among the skulls in our collection there was not one that was distinctively Toltec or Aztec, and Dr. Howe has shown his devotion to his profession by securing this and sending it where it would be appreciated.

IN THE INFIRMARY.—The Buffalo Dental School is fortunate in the number of patients which apply at its infirmary. Since it has moved into its new quarters the supply has been in excess of the demands, and the students actually have more than they can take care of. There are many days on which it is absolutely necessary to turn patients away, because of inability to give them attention, while others get only a part of the work done for which they applied. The laboratory has also been abundantly supplied with practical work. Both infirmary and laboratory will probably be kept open during the summer, and students will be received at any time. A number have already expressed their desire to attend the spring and summer course.

A NEW DENTAL SCIENCE.—Alabama has a Dental College located at Bridgeport, which has one department not possessed by other schools. It is but a lectureship, though it is filled by a teacher who is probably a "Professor" by divine right. At any rate he is thus announced, though he has no other title. He is "Lecturer on Animal Magnetism."

THE INTERNATIONAL MEDICAL CONGRESS.—Dr. N. W. Kingsley sends out a circular in the interests of the Section of Odontology of the Congress which meets at Rome this year. This prompts a gentle smile. The Dental Section of that meeting is founded upon the theory that dentistry is a specialty of medical science, a doctrine of which Dr. Kingsley has heretofore been known as the bitterest opponent. The Columbian Congress, which meets in Chicago this year, is a practical illustration of the opposite hypothesis—that dentistry is, as Dr. Kingsley has always argued, something distinct from medicine, and should hold its meetings separate. Has he seen a great light, been convinced of the errors of his ways, or—or—what?

KANSAS CITY DENTAL COLLEGE.—The graduating exercises were held on Friday evening, March 3d. The following received the degree of Doctor of Dental Surgery :

ANDREW WILLIAM DAVIS Kansas
 RICHARD JEFFERSON WINN Missouri
 JOHN H. HOLKE, M. D., Missouri
 W. HARRY DEWITT DWIGHT Iowa

The Faculty address was delivered by Prof. Charles H. Lester and the degrees were conferred by C. B. Hewett, D. D. S., President.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK.—The above Society will celebrate its twenty-fifth anniversary with a three days' session, at Albany, May 10th, 11th and 12th. The usual number of essays and discussions by prominent men in the profession, historical reminiscences, etc., together with a dinner, will constitute the programme. It is intended to make it rather a social than a scientific meeting, and it is hoped that a large number of the profession, both in and outside of the State, will be present. For any information regarding the meeting, address the Secretary, Charles S. Butler, Buffalo, N. Y.

NOT VERY WOMANLY.—The Woman's organization of the World's Columbian Exposition has made some peculiar demands upon the Dental Congress. They require that women shall be placed in some of the principal offices, and given representation on all the important committees. They specify the positions to which they demand that women shall be appointed, and are not bashful in urging their claims, either. If women are to be appointed because they are women, that destroys the very grounds upon which they make the demand—the equality of the sexes.

DEATH OF MRS. T. G. LEWIS.—Died at her home in the City of Buffalo, January 15, 1893, Mrs. Elvira P. Lewis, wife of the former editor of this journal. She was born in Darien, Genesee county, N. Y., and was married to Dr. Theodore G. Lewis in December, 1865. She was a woman of quiet, refined tastes, devoted to her home and family, and beloved by all who knew her. She left one child, a daughter now grown to maturity, and the husband of more than a quarter of a century of happy domestic life, to mourn her loss.

THE WEIGHT OF A RAINFALL.—A San Francisco paper has estimated the weight of the water which fell during a rain storm in which 1.72 inches of water was precipitated, and found that in the city and county it amounted to over 5,000,000 tons. On February 4th and 5th of 1887, there fell in San Francisco almost 15,000,000 tons.

DR. F. A. LEVY.—Dr. Fred. A. Levy, of Orange, New Jersey, died at his home there recently. He had been out of health for some time, and last summer took a trip to the far northwest in the hope of benefit, but without permanent results. Dr. Levy occupied a prominent place in dentistry, and had very many warm personal friends, for he was eminently a friendly man, his genial, kindly disposition manifesting itself in a thousand different ways.

CLINICS AT THE CONGRESS.—The Chairman of the Clinic Committee, Dr. C. F. W. Bödecker, 60 East 58th Street, New York, desires information concerning any meritorious invention in operative dentistry of the last three years. He would be glad to receive the name and address of the inventor, and to know if he is a reputable practitioner, and whether or not he is a member of a Dental Society.

METALLIC SLATE PENCILS.—Aluminum is being used for making marks upon slates. It has been found that it makes as clear a mark as the ordinary pencil and requires but little more pressure, while the mark is easily erased with a sponge. A German company is now engaged in the manufacture of such pencils. They need no pointing, do not break, and are practically inexhaustible.

COBALT.—This substance, concerning which so much has been said lately, is a simple mineral substance. It is almost always combined with metallic arsenic, as the ores are found together. Dr. E. C. Kirk has made an analysis of the cobalt and cocaine which Herbst has recommended in pulp treatment, and finds that it consists of pure arsenic, and nothing else, save the cocaine.

NEW EDITION.—Another edition of Prof. Dr. Miller's work on "Micro-Organisms of the Human Mouth" has been brought out in Germany. The book was materially enlarged and some parts of it were re-written. It has been adopted in the standard text-book on that subject in Germany. The same may be said of it here, but it is not studied to the same extent as there.

CHANGE OF TIME.—The Columbian Dental Congress will be held during the week commencing August 14. The Congresses of Science and Philosophy have been assigned to the week commencing August 21st, and this obliges a change in the date of the opening of the Dental Congress. Abundance of room is assured for the meeting and clinics.

TUT! TUT!!—"The freshman class has completed their course in taking impressions and pouring casts, and are now learning the art of flasking and vulcanizing."—*The Dental Journal, U. of M.*

Better take a run through the Literary Department, boys. Such a mixing of persons and numbers is scarcely excusable, even in college students.

NO MEETING THIS YEAR.—The Mississippi Valley Dental Association, the oldest in America, will have no meeting this year, owing to the fact that there are to be so many congresses.

EXPANSION OF METALS.—Zinc expands up to the melting point. A bar of hammered zinc six inches long will expand one one-hundredth of an inch in raising the temperature 100° F.



EBENEZER MERRITT

THE
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SOME THOUGHTS UPON PYORRHŒA ALVEOLARIS.

BY W. C. BARRETT, M. D., D. D. S., BUFFALO, N. Y.

Read before the Dental Society of the State of New York, at its Twenty-fifth Annual Meeting, held in Albany, May 10 and 11, 1893.

Within the realms of dental pathology, I know of no single subject that demands so much of scientific and intelligent observation as that condition which we call pyorrhœa. The etiological problem which has vexed dentistry ever since it had an organized existence—that of the origin and cause of dental caries—has been practically solved. But concerning the next most common and destructive disease of the teeth, there is no intelligent and consistent theory that is accepted by any considerable proportion of dental pathologists. Those who do essay its cure are at work in the dark, and the remedies used are altogether empirical, while the great body of dentists do not attempt any radical remedial measures whatever, but assure patients that the disease is incurable, and stand idly by and philosophically witness the destruction of the organs which it is their accepted duty to save.

This condition of affairs is not at all creditable to us. We sometimes reproach medicine that it has not yet learned the pathology of many diseased general conditions, but here is our second greatest enemy stalking the field in contempt of our efforts, clothed in a coat of mail that has so far proved impenetrable to our most polished weapons. It is time that we became awake to the situation, and set about the study of it with

some degree of persistent and intelligent earnestness. I can well remember urging in the American Dental Association the formation of a section of etiology, when the origin of dental caries was as much a mystery as now is that of pyorrhœa. With others, I argued that it was to our discredit that so many contradictory theories were urged concerning that condition most destructive to teeth, and that none was generally accepted. That movement culminated in the stimulation of Miller to his famous series of exhaustive observations, and the solution of the problem. Why should not another general movement for the study of pyorrhœa end in the production of another Miller, or the incitement of the original one to another series of experiments, that shall end in the determination of the true character of this dread destroyer, and the discovery of some certain means of combating it?

The causes to which pyorrhœa is ascribed by different generalizers are too numerous to recapitulate. I say generalizers, because I know of no one who has made any such series of original observations as will entitle him to be called anything more than a collator, or theorizer upon generally observed facts. One declares it connected with a gouty, or rheumatic diathesis. If this is an important factor, we should never be able to detect true pyorrhœa without such a pathological condition, nor should there be any marked case of that disease separate from gouty troubles. The facts indicate that it is present when there are no symptoms of such a condition.

Another would connect it with some form of uterine troubles; but, unfortunately for the advocates, it is not confined to monodelphic females. Still another attributes it to an inordinate use of common salt. But the scurvy that afflicts people who are deprived of fresh vegetables is not true pyorrhœa, which, while it may be confined to people who use salt as a condiment to a greater or less extent, seems to exercise a kind of selection among them that is inconsistent with the theory. When the real cause of the disease is finally determined, it will of course be that which always, under specified conditions, will produce it, and without which it will never be found. Short of that, any definite state may be a factor, but it cannot be the real cause, and in this view the etiology of pyorrhœa is yet hidden in mystery.

The term pyorrhœa alveolaris means simply a flow of pus from the alveolus, and would thus include all septic conditions of that process. But by common consent the meaning is limited to a discharge of septic matter about the gingival margins, though the actual source of the pus may be deep within the tooth-socket. Miller says there are without doubt three factors active in producing this disease—a constitutional taint, a local irritant, and micro-organisms. This is undoubtedly true, yet to my apprehension they are not all equally active in different conditions,

nor are all of them necessarily factors in every case of that which is usually called pyorrhœa.

I think I can recognize at least three different phases of the disease, each perhaps having its own special etiology and distinctive symptoms, and each demanding treatment peculiar to itself. I will endeavor as briefly as possible to sketch the probable etiology, the symptomatology, the pathological changes as I have observed them, the prognosis, and the course of treatment that I have adopted with the best success in each case.

GINGIVAL PYORRHŒA.

The characteristic appearance of the first condition which I will consider, consists mainly of an inflammation of the margins of the gums, or a gingivitis, distinguished by the presence of pus and the breaking down of tissue, caused by a purely local irritant. It commences with a kind of stomatitis of a follicular character, and localized at the gum margins. This is not always the result of a lack of proper care of the teeth, but it may be a local manifestation of a general atony. The mucus follicles, which are numerous and somewhat specialized at the gum margins, show degeneration in their function, and the condition of the secretion is materially changed, becoming irritating in its nature, and perhaps even excoriating. The gums are swollen and spongy, and are characterized in extreme cases by a kind of purple color, almost akin to that of necrosis. They are exceedingly turgid, but preserve their glistening appearance. They are somewhat everted, and the edges, instead of the sharply defined margins against the tooth, are rounded and thick. The inflammation, having its origin in the gum tissue, proceeds to the pericementum, and there is a wasting of that, nearly evenly about the tooth, with the consequent absorption of the edges of the alveolar walls. There is an effusion of plastic lymph at the point of inflammation of the the pericementum, and this is broken down by the continued irritation and the septic condition which follows, and the result is an almost constant discharge of pus.

Yet I consider this flow, as well as the destruction of the pericementum and alveolus, but secondary, and consequent upon the train of symptoms first described. There is little, if any, deposit about the necks of the teeth, and if it be present it is not a primary etiological factor, since the condition may exist and the teeth be entirely clear of any deposit whatever.

The etiology, while it may rest in a general atony, is not cachectic, but rather accidental. It begins with the follicular stomatitis to which I have referred, and which produces an altered condition of the follicles and of their secretion, and this of itself becomes the local irritant which intensifies the state.

The pathology consists in the morbid change in the follicles, and the hyperæmic condition of the gums, with a great degree of œdema, or infiltration of the soft tissues, a pouring out of plastic exudate and its infection and breaking down, all these in turn, by contiguity of tissue and by local irritation, producing an inflammation of the pericemental membrane, with ostitis and wasting of the edges of the alveolar walls. It is this condition which is so frequently mistaken for a worse one, and in my opinion this is the class of disturbances, marvelous cures of which are so often related in journals and at dental meetings, as the result of a few days of empirical medicament.

The treatment is simple and the prognosis always good. If there be a reduced tone of the system, tonics should be employed, with plenty of out-of-door exercise. The food should be generous, and every hygienic precaution should be used. Massage of the gums with the ball of the fingers, and by the frequent use of a rather soft brush, should be resorted to. Some form of mild cauterant may be applied at the margin of the gums, and ropes of cotton wet in it should be pressed down beneath them to the edge of the alveolus. I have found aromatic sulphuric acid extremely useful in such cases, but a dilute solution of silver nitrate, or of carbolic acid, or of the so-called Robinson Remedy, [carbolate of caustic potassa] or of tri-chlor-acetic acid, are useful. Caustic pyrozone, a remedy that has lately come into use, is excellent, and I have had remarkable results from it in such instances. Some antiseptic mouthwash should be employed, and for this purpose I have found nothing better than listerine, which may be used in full strength upon the brush, or diluted with five to ten parts of water as a mouthwash or gargle.;

Some stimulating astringent may be employed as an occasional dressing, and for this I have found a solution of chloride of zinc, five to ten grains to the ounce, excellent. Of course general remedies are indicated if the condition be only a local manifestation of a general anæmia and malaise.

. NODULAR PYORRHEA.

The second condition which I wish to describe, is marked by another train of symptoms, and its pathology varies from the first. The initial manifestation, so far as I am aware, consists in the deposit upon the periphery of the root, at some point, of a hard, dark, closely adherent nodule of calcific matter. This may increase until the whole side of a tooth may become involved. As it characterizes the condition, it may be well to consider this deposit more particularly.

It differs from the usual calculus found upon exposed portions of a tooth or dental plate, not only in color and density, and general appearance, but in locality. The usual tartar is from the saliva, and is precip-

itated, as is the lime which forms the coating on the inside of teakettles and boilers. The calcium is held in solution in the saliva by an acid, which in a healthy, normal condition, it nearly neutralizes. Coming in contact with the carbon dioxide of the breath, a carbonate is formed, which is precipitated.

But the chemical formula of the deposit which causes or accompanies the condition that I am now describing, is different. I have not at hand any exact analysis of these deposits, but I believe it to be the fact that there is a larger percentage of phosphate, and a smaller of carbonate of calcium, than in ordinary deposits. Its origin is not from the saliva, and hence it cannot be called salivary calculus. Undoubtedly it must be derived in some way from the blood, and hence it has, by Dr. Ingersoll, been named sanguinary, and by Dr. Black, seruminal calculus. Either term is quite correct. Black, in his paper in the first volume of the American System of Dentistry, says that he believes the deposit to be the result of any irritation of the gingivæ which will cause them to weep a serous fluid. I cannot but question this statement, because of the fact that it is not infrequently found near the apex of the root, even when there has been no apparent great pericementitis. It is sometimes entirely isolated from the gingivæ, and small nodules may be found upon teeth in which the gingival border of the alveolus is complete, with no opening to them from the cervical margins. This leads me to the conclusion that the deposit of these nodules is the initial lesion, so far as the tooth and its investing tissues go.

Another reason is that it does not usually commence when there is a considerable deposit of salivary calculus, which certainly would induce such a gingival irritation as Dr. Black believes to be the cause of it, although salivary calculus is likely to succeed its ravages. My own impression is that it is due to some special stimulation of the pericemental membrane, and that it is analogous in its origin to that condition called excementosis, or hypercementosis, except that the deposit from the membrane is not in any sense organized, nor indeed is it the result of anything like true functional activity. But be that as it may, the deposit is peculiarly irritating in its nature, and when the accretion is sufficient in volume it induces a breaking down of tissue, a resorption of the alveolar walls, with a destruction of the pericementum until the cervical margin is reached, and thus a pocket is formed extending from the gingivæ to the extreme limit of the deposit.

Dr. J. N. Farrar distinguishes this condition by the term *Loculosis Alveolaris*, and in a series of articles published in the *Independent Practitioner* for 1885 and '86, he describes the symptoms very accurately. I cannot, however, agree with him when he says that the initiation of the lesion is at the gingival margin, or the annular lip of the gum. But his

remarks concerning the general character of the disease may be studied with great profit.

The etiology, then, of this form of pyorrhœa, I believe to be in an abnormal condition, whether general or local, of the pericementum of a tooth, that induces the lodgment upon the root of a peculiarly irritating deposit, the sanguinary or serumal calculus, and the mere local irritation of this produces the subsequent changes.

The symptoms are, first soreness and perhaps elongation of the tooth, which are usually attributed to other causes, until the pocket is fully formed by the destruction of the pericementum and alveolar walls. The pocket becoming septic, and the deposits constantly increasing, there is a discharge of pus from it, with inflammation and turgidity of the gum, and pain of a sub-acute character that is more or less constant. Occasionally there is an exacerbation of all the symptoms, with the characteristic indications of a pus gathering, which discharges and gives partial and temporary relief.

The pathology has already been briefly sketched. It consists in the breaking down of the tissues under the continued irritation of the deposits, with their constantly increased accumulation, and the spread of the diseased condition until the whole socket is destroyed and the tooth falls out, when, the irritating cause being removed, there is a cessation of the degeneration.

The treatment consists in the removal of the calculi as a first step. This is usually quite difficult, from the close adherence of the deposits, and their density and hardness. If very much of the socket shall have been destroyed, so that the tooth is very loose, this will be found impossible, and the removal of the organ becomes a necessity. The operation demands delicate and peculiarly shaped instruments. Both the pushing and pulling movements will be found necessary. Sometimes a specially shaped cylindrical or pyramidal bur may be used to advantage. If the deposits can all be removed, there will probably be little difficulty in effecting a permanent cure. But to do this will entail the necessity for several visits on the part of the patient. After each operation the pockets should be carefully washed out, and they may be treated with aromatic sulphuric acid, this to be followed by a stimulating astringent. They should be douched with some antiseptic solution, such as mercuric chloride, permanganate of potassium, or antiseptic pyrozone, and should be carefully kept aseptic until the pocket has healed up with a deposit of new bone. If there is reason to suppose any real caries of the alveolus, the edges of the affected bone should be burred out to the limits of the deposit.

During the course of this treatment, if the teeth are loose in their sockets it is necessary to devise and insert some apparatus to hold them

fast. It is folly to hope for any deposit of bone, and reproduction of pericementum, unless they are immovable, and much of the success of treatment will depend on this. I have usually been able to secure them by the use of ligatures crossed and woven between the teeth, and forming attachments to those which are sound. It is surprising what rigidity may be given to very loose teeth by a ligature ingeniously applied.

The prognosis depends upon the advance which the disease may have made before remedial measures were instituted.

CACHECTIC PYORRHOEA.

The third condition is the most serious of all. I believe the first of those described in this paper to be due to a local degeneration. The second to a local irritant, depending upon some general disturbance. Both are exacerbated by the presence of micro-organisms. The third condition I believe to have its origin in some constitutional dyscrasia, for it can readily be traced from parent to child. There is little doubt that it is infectious, and it seems probable that there may be some specific organism to which it may be due. Possibly the belief that it depends upon heredity, may in some instances have been obtained from the fact that the child is apt to become infected from the parent. It attacks people at an earlier age than either of the preceding conditions, and I have seen it with comparative frequency in children of ten or twelve years. The initial point, I believe with Dr. Black, to be in the periodontal membrane. Indeed, the author named denominates it Phagadenic Pericementitis, thus indicating his idea of its origin. Dr. Witzel, of Germany, calls it Infectious Alveolitis. There is, as the primary lesion, an inflammation of the pericementum, producing an elongation and soreness of the tooth, and that, too, without any immediate threatening of loss of vitality. The other special symptoms, aside from the loosening of the tooth, are the characteristic red lines or blotches of pericementitis, with an irritable condition of the gingivæ, and the discharge of pus from the sockets in the later stages. The pericementum dies in circumscribed locations, and the destruction of the alveolus follows through the consequent otitis. Pockets may be formed about the tooth, but they will not be characteristic of the disease, as in the second condition described, nor will they be localized. The condition is not characterized by the formation of local deposits, as in the second condition, but the breaking down of the tissue is more general, and the flow of pus more profuse. The whole of the pericementum of a tooth may seem affected, and the disease spreads from one tooth to another, until perhaps before the first one is entirely lost, every one, in the upper jaw especially, may have been attacked.

In the second condition, other teeth will probably be affected by the

same cause that produced the first lesion, but there is no contagion. Successive teeth become diseased precisely as in hypercementosis—through the general morbidity, and not because of any cachexia. But in this third condition, there is a distinct spread of the disease from one tooth to another in the same mouth. Furthermore, dentists may carry the infection from one mouth to another, through unclean instruments.

To my apprehension, there is a distinct element of heredity in this condition, for it can readily be traced through two or three generations. It might be urged that as it is admittedly infectious, there is a possibility that it may be communicated instead of inherited, but there are many instances in which the parents have died sometime before the appearance of the condition in the children, thus precluding the possibility of direct infection. There seems to be a distinct diathesis connected with it. What this may be is not yet definitely determined.

The etiology, then, of this third state is probably constitutional, at least in the tendency to the affection. This may be aggravated by a lack of hygienic care, but even the most scrupulous attention to the teeth will not altogether prevent its recurrence. I have patients who are extremely fastidious in the care of their teeth, and in whose mouths I have determinedly fought the disease for years, only to see them return regularly with some new outbreak of it, when we had thought it entirely stamped out.

The pathological changes consist in a degeneration of the pericemental membrane, and its melting down and final entire destruction, with the consequent resorption and wasting of the alveolar walls of the socket of the tooth, the presence of micro-organisms and the evolution of pus. There is also another change that often accompanies this state, and that is a loss of position of the teeth. They become distorted, are inclined to separate from each other, and to fall outside the line of the arch. There is a spreading of the alveolus by what would appear to be an interstitial growth, until two teeth may be so far apart that it would be possible to insert another between them. Especially are the incisors liable to this irregular divergence, and I have seen many instances in which beautifully arranged natural dentures lost all their regularity, and were made to present a very unsightly appearance. The condition is never that of contraction of the arch, but seems to be a thrusting forward of certain of the teeth, causing a protrusion, or an elongation, or a lateral divergence, sometimes to an extreme degree.

The symptomatology has already been sketched. It consists in a pericemental inflammation in the earlier stages, with all the usual indications of that condition, a distinct hyperæmia of the surrounding tissues, loosening of the teeth, a discharge of pus more or less constant, with soreness and pain of a sub-acute character. Not unfrequently there is

considerable of pyogenic fever attending the suppuration, with a general malaise.

The prognosis is extremely unfavorable. Local remedies may retard the progress of the disease and subdue the acute symptoms, yet when relieved it is almost certain to return again sooner or later, and even to hold it in check will require the most unremitting attention on the part of both patient and dentist.

The treatment consists of the use of mild cauterants to destroy degenerated tissue, antiseptics to overcome the septic condition, with local stimulants to promote the formation of new tissue when practicable.

I have thus as briefly as possible sketched the separate forms of the exhibition of this disease. But I would not have it understood that they are always distinct and separate in their pathology, or even their etiology. On the contrary, we frequently find the symptoms decidedly mixed, and the characteristics of the different states appearing in one individual case. Pockets may be formed, with deposits of seruminous calculi, and at the same time the divergence and sprawling of the teeth which marks the third condition. When such is the case, the leaning of the tooth is always away from the pocket.

I have in more than one such instance witnessed an open space extending nearly to the apex of the root, which inclined away from the bare membraneless walls, these being plainly seen to a considerable depth, there being no special tumefaction of the gum tissue to close up the space, and with but a limited amount of deposit, and in some instances without any signs of calculus whatever. Several such cases were presented at my clinics in the University of Buffalo during the past winter, and in at least two of them a free burring out of the affected alveolus to the bottom of the pocket, and its subsequent treatment with iodide and chloride of zinc, resulted in a new growth, entirely filling the vacancy, but without any effect in restoring the tooth to its original upright position. Whether there was a new formation of the pericementum may be an open question, but in one of the cases there was every appearance of it, and in the other it was not improbable. Of course I did not dare to attempt the moving of the tooth back again by artificial means, being satisfied that this would eventuate in nothing but the breaking down of the newly formed osseous growth, and perhaps a worse state than that which originally existed.

I must leave the subject with you, in the hope that something definite may be brought out in the discussion which I trust may follow, and that new light may be thrown upon this much vexed question. I can only say that there are many symptoms and pathological changes which time forbids me to consider, and that this presentation is, therefore, at the best but fragmentary.

THE EARLY HISTORY OF DENTAL LEGISLATION IN THE STATE OF NEW YORK.

BY A. M. HOLMES, D. D. S.

Read before the Dental Society of the State of New York, at the Twenty-Fifth Annual Meeting, held in Albany, May 10 and 11, 1893.

The matter of procuring and enforcing legislative protection for the dental and medical professions in this State, has been attended with a vast amount of hard and discreet work. That the ordinary legislator is naturally antagonistic to any restrictions in such matters, the course of dental legislation has fully demonstrated.

In the fall of 1867, the lamented B. T. Whitney, of Buffalo, inaugurated the movement of procuring dental legislation in this State, and called a meeting of dentists for that purpose at Utica, which was attended by some twenty from various parts of the State.

The basis of an organization was fully considered. The plan of County Societies, as adopted by the medical profession, was favored by those present from counties containing large cities, while those from rural counties, containing but few practitioners, expressed grave doubts as to the success in maintaining county societies. My personal experience, acquired in the work of aiding in maintaining a rural county medical society, as its secretary, was adverse to the county plan.

After a careful and thorough consideration of this most important feature of an organization, the fortunate one of using the judicial district divisions of the State was approved by the meeting, which gives the organization eight district societies, as a basis of a State society. It has proved very satisfactory, and the experience of a quarter of a century has fully demonstrated the wisdom of this method of organization, since it has proved extremely difficult to maintain a society in at least one of the judicial districts; and while this is not creditable to the dental profession, it is a proof of the wise action of the meeting that started the ball in motion for a dental law in this State.

The action of this first gathering was controlled by those who believed in making haste slowly, the purpose being to make a stand there, and then to organize those engaged in the actual practice of dentistry in this State, to commence the important work with a view to mould the chaotic condition of dentistry and place it on a higher plane of usefulness; and to accomplish that safely and surely, we must not overdo and take the risk of a check and disappointment in our undertaking. We fully understood the situation, that we were starting out on a long educational purpose, for we must gather up the ignorant, the unskilled, and the pretender in practice in the State, as well as the educated, scientific and skillful

practitioner, since the courts so construed our State Constitution as to prohibit retroactive acts of the character of our proposed organization. The result of this meeting was the drafting of an act, and the appointment of a committee to procure its passage by the next Legislature. The bill was introduced and referred to a committee, where it remained, and nothing further was heard from it until Dr. Whitney, in his anxiety about the matter, undertook to stir up the friends of the bill. I received a letter from him expressing much anxiety and fear that the bill would fail to pass from neglect, saying that he had been unable to get any information regarding it from those having it in charge, and urgently requesting that I undertake to ascertain its status. On receipt of his letter I went to Albany, and found the bill with the committee to whom it was referred. An investigation disclosed the fact that members of the committee were prejudiced against the bill, regarding it as legislation in the interest of a class and against the rights of the people. A hearing was granted, and members of the Legislature of a more liberal inclination aided in influencing the members of the committee to make a favorable report.

At a meeting of members of both branches of the Legislature who favored the bill, and who believed that some restriction in the practice of dentistry was needed for the protection of the people, arrangements were perfected for a prompt passage of the bill, which were carried out, and on the 7th day of April it received the signature of the Governor and became a law. It is well known by some of the original members of the society, that early in its history a very sharp contest was waged between those who acted from selfish motives, and those who sought and labored for the elevation of the profession; and that the first conflict between those contending interests arose over what was regarded as improper demands on the society for expenses connected with the procurement of this legislation, which resulted in a clear understanding that this sort of thing would not be tolerated in the society.

At the annual meeting of 1869, the proposition was brought before the society for the granting of a degree of M. D. S., and that those who passed the examination of the Censors should be entitled, on the payment of a fee of \$20, to the degree of the society, the diploma to be signed by the president and secretary. There was much controversy and difference of opinion over this proposition; many members opposed the granting of a degree by the society; others were opposed to the proposition for the reason that, as drawn, it virtually took the granting of degrees from the control of the society and placed it in the hands of certain officers. The matter was amicably adjusted by so changing the proposed act as to provide that the Censors should refer the names of successful candidates to the society, in the form of a report, which

should receive its sanction before the degree could be conferred. In this form the bill passed the Legislature and received the signature of the Governor, April 21, 1870.

In 1877, at the annual meeting of the society, important amendments to the dental law were proposed, with provisions requiring all dentists in actual practice in this State to register with the County Clerks of their respective counties. This bill was put in charge of the chairman of the Committee on Legislation, and was, under his direction, introduced into the Legislature of 1878, but it shared the fate that has threatened every Dental bill that has come before the Legislature of this State.

In the defeat of this bill the natural bent of the average Legislator was manifested. They seemed to regard their work as a great triumph of the rights of the people over a conspiring and self-seeking class, but it proved to be only a preliminary skirmish. The bill was not buried so deeply but that the State Society dug it up at its next annual meeting, and instructed its Committee on Legislation to try again to procure its passage. At the next session of the Legislature the bill was introduced in the Senate; it was reported favorably by the committee, but when it came up on its third reading, the Senate had the liveliest kind of time over it under the leadership of Senators Jacobs, of Brooklyn, and McCarthy, of Syracuse, the leaders of the respective political parties in the Senate; they had a regular field day, with the poor Dental bill as a football, kicking it all around the Senate Chamber, denouncing it as an imposition on the people, "an old stager" that had been knocking at the doors of the Legislature and had been "kicked out of the other House the previous year;" that it was sought in the interest of a class of tinkers and pretenders; that it was against public policy and never should be permitted to cumber the statute books; in fact, the Senators vied with each other in the most extravagant and sarcastic speeches against the bill. Senator Jacobs was opposed to the bill for special as well as general reasons. Senator McCarthy especially opposed the bill because he was informed that the dentists of his city were against it, etc., etc.

The bill was, by request of the chairman of the committee that had reported it, referred back to the committee to save it from defeat, and I received a communication giving a summary of the arguments made against it. Of course I realized that this was a critical moment for dental legislation in our State, for if this were to be accepted as a true status of the matter, we should not only lose this bill, but in all probability the repeal of all law regulating the practice of dentistry would follow as a natural sequence. Prompt and energetic action seemed an absolute necessity for "self-preservation." I wired the committee to hold the bill, and went to Syracuse and procured the names of the dentists there to

a petition endorsing the bill, and urging the Legislature to pass it. Armed with this reply to Senator McCarthy, I went to Albany and had an interview with Senator Jacobs, informing him that I was a member of a committee appointed by the State Dental Society to present to the Legislature this Dental bill, which they had carefully prepared, and that if he could favor me a few moments, I desired on behalf of that body to give him some of the reasons that actuated the dental profession in asking for this legislation, which they believed to be in the interest of the people, rather than in the direct interest of the dentists. The Senator received me very cordially, and after talking the matter over said: "I am very much obliged to you for giving me this information. I presume I made a fool of myself, as we are quite liable to do when we undertake to talk about affairs of which we know absolutely nothing, but I think I must oppose the bill on general principles." He acknowledged, however, that those general principles were based on a belief that the dentists of his city were against the bill. This necessitated a trip to Brooklyn.

It seems to be proper and just to all interested, and in the line of the request made by the officers of this society, that I write the inside history of our early dental legislation for this the twenty-fifth annual meeting, and that you should know the fact that we are largely indebted to our friend Dr. Hill for the passage of this bill. Without Senator Jacobs, we were in imminent danger of defeat, and it was due to the energy and work of Dr. Hill that we succeeded in getting an interview between the Senator and the dentists of his city, and a person with less energy than Dr. Hill would have failed to find the Senator and arrange the meeting, since the Senator's district seemed at that time to be his home, and his constituency his family. When the committee reported the bill back to the Senate, and it was put on its passage, all was as serene as a summer morning. Senator Jacobs is reported as having said in a good-natured way, that after having reflected on the matter, if he must have his jaws broken or twisted or his eye-teeth cut, he preferred to have it done scientifically; therefore he favored the bill. Senator McCarthy said, after more thought and consideration of the matter, he believed the object and purposes of the bill were such that it would result beneficially to the people; therefore he favored the bill. So the good-nature became contagious and the bill passed the Senate.

But its trials were not over. In the Assembly it had a different experience, resulting from the stupidity and assumed wisdom of a legislator who knew better than all the dentists on earth what a dental law should be. This chairman of a committee was obstinate, and after having so changed our bill that it was not recognizable,—in fact it was just the kind

of a bill that we had been watching and guarding against from year to year,—he confronted us with the assurance that it was the bill as changed or nothing. Discretion is said to be the better part of valor, so, at times, it is the better part in matters of legislation. We acted on that principle, requested the gentleman to report the bill at his earliest convenience, and deciding to resort to strategy, we went our way, but were not hopeless. There was one more resource short of a hand to hand contest, in which we were liable to fail. The Assembly usually has a sub-committee near the close of the session, and bills that are referred by unanimous consent to this committee, (and none others can go to it,) are reported complete and passed without further consideration. When the Dental bill was reported to the Assembly, a friend asked that it be referred to the sub-committee. A member objected. By the influence of the Hon. George B. Sloan, a leading member of great influence, he was induced to withdraw the objection, and the bill went to the sub-committee. When this sub-committee reported the Dental bill, it passed the Assembly without opposition and, of course, the wise and determined chairman of the public health committee was made happy in the belief that he had gained his point; and I suppose that he is not aware to this day that it was the Senate bill that had been substituted for his by the sub-committee which passed; but such was the case, and our bill went to the Governor and, after considerable hesitation and delay, it was signed.

A bill was introduced by Senator Lynde, in 1881, which opened wide the door for registration to all comers indefinitely. An interview with the Senator developed the fact that he did not appreciate the effect of the bill, and that his only purpose was to aid a constituent who had not registered under the Act of 1879, but was entitled to do so. The Senator was very fair, and said: "You draw a bill as you want it, so only that my friend can register, and I will substitute it for this." The result was the Act of 1881.

This comprises the bills that passed between the years 1868 and 1882, and went to the Governor, receiving his approval, but does not include all bills introduced in the Legislature. Scarcely a year but one or more bills were proposed and placed in the hands of members of the Legislature. Many of this class of bills are not introduced by those entrusted with them. Others have been left to die a lingering death in the hands of the committees. In the Legislatures of 1888 and 1892, acts were passed amending the dental law. The Act of 1892, while containing very important amendments, revised and codified all the dental laws of the State, and brought them together in one act. This was done with much patient care by the chairman of the Committee on Dental Law, aided by our attorney and other members of the State Dental Society.

This Society owes a large debt of gratitude to the present chairman of the Committee on Legislation, for his untiring energy and watchful care in preventing vicious legislation, and the time and money spent in the enforcement of the dental law during the years that he has acted in that capacity; for whether or not it be true that "eternal vigilance is the price of liberty," it certainly is so in the dental legislation of this State.

The members of this Dental Society have reason to feel very proud to-day over the successful accomplishment of so important and creditable an organization, and to congratulate the profession in general and themselves in particular, that the object had in view by our lamented friend, Dr. Whitney, in inaugurating this legislation, has been accomplished in an honorable and worthy manner; that personal interests have been made subservient to the general good of the profession, and that to-day our organization is based on a code of laws that imparts to it qualities that no other State organization possesses.

Especially in requiring the colleges and schools of instruction in dentistry to maintain a fixed and high standard of education and training, in order to be placed with reputable schools, and that their diplomas may be recognized in this State, is this provision of law of the greatest possible value in promoting a higher plane of action in our schools. One object of legislation in this State has been to place the State organization in harmony with dental schools, to aid and strengthen them. The examinations for the degree of M. D. S. are based on more than the knowledge and training acquired in the schools. It requires experience in the practical application of these principles. With our dental law, as revised by the commissioners of the Statutes, which commissioners were selected with special reference to their fitness to go over the entire Statutes of the State, revise and sift out ambiguous language, and misused or meaningless words and bad features of law,—the object being to have all the statutes thus corrected by the State Commissioners re-enacted, so that there shall be no repetition or conflicting language or doubtful phraseology,—this revision of the dental law has been attended with much anxiety on the part of your Committee on Legislation, and has required time and labor in the work with the commission. They have succeeded in having the dental law so amended that those claiming the right to register under the law of 1878, are to apply to the State Board of Censors for a certificate, and establish their right to register with that Board.

With the dental law of the State thus revised by the commissioners, and this provision for registration, future Legislatures will be disinclined to favor amending or changing our law, and we shall be spared the humiliation and trouble of annual contests over the matter in the Legislatures.

PRESIDENT'S ANNUAL ADDRESS.

Delivered before the Dental Society of the State of New York, at its Twenty-fifth Annual Meeting, held in Albany, May 10th and 11th, 1893.

BY W. W. WALKER, D. D. S., NEW YORK CITY.

Gentlemen of the Dental Society of the State of New York:

Another year has passed away, another cycle has been added to the unending course of time since last we met. In the providence of God we are once more permitted to come together laden with the fruits and experience of the year that is past, that with grateful hearts and with minds earnestly devoted to the great cause of human progress, we may lay our free-will offerings here upon the common altar of our profession.

At these annual gatherings, the representative men of the various District Societies of our State are brought together, and we may therefore be regarded as comprising the wisdom, intelligence and learning, as well as the energy and inventive genius of the dental profession of this, the great Empire State.

For a quarter of a century, my dear friends, have the dentists of this State been laboring to elevate our standing and place our chosen profession on the topmost round of the professional ladder; and it rests now with the dental profession of the world to say whether we have accomplished this vast undertaking.

I shall not go into detail of what has been accomplished by members of this organization, but will leave this to one of the number who assisted in the good fight, and who, I am happy to say, is with us today. For work done as only loyal and conscientious members can do it, I have asked Dr. A. M. Holmes on this occasion to be the historian; and it is to be hoped that the Almighty, who has ever been in every way kind to us, will permit the noble men who have been his colleagues to remain with us many, many years.

THE DISTRICT SOCIETIES.

Section 13 of our by-laws requires the President to make a concise report of the work done during the year just passed, by the several District Societies under this, the parent organization. As chairman of the Executive Committee of the World's Columbian Dental Congress, much of the time has been occupied in that work which rightly belonged to this society; consequently I have not been able to visit more than two District Societies; but I have been informed by the officers of the several districts that never in the history of dentistry in our State has harmony prevailed to such a degree as at the present time, and never have the opera-

tions performed been of such high character, both practically, and scientifically. :

The Second District I have visited on two occasions, and it would be placing it very mildly to say that it has never been in such a flourishing condition as it is to-day. So great has the success of this district been, that fearing something unforeseen might happen to mar this very pleasant condition, the members prevailed upon the Brooklyn dental parliamentarian, Dr. O. E. Hill, to assume the gavel once more, with E. T. Van Woert as his chief of staff.

The same happy condition exists in the First District. Rather than cause any uneasiness, and to retain that "*esprit du corps*" which it is to be hoped will always exist, we also re-elected our old leader, Dr. Carr.

Following the example of our brethren in the western part of the State, the First and Second District Societies held, during the past winter, a joint meeting, which I assure you was not only a successful one, but most enjoyable and entertaining as well, with Dr. Frank French, of Rochester, as orator.

DENTAL LEGISLATION.

The dental law of the State of New York, as it stands to-day, should be a monument to the members of this society, more especially the Law Committee, for I personally know they have worked with diligence and zeal, and without compensation, and at last have secured what is considered by all fair-minded dentists to be the best dental law in the United States. I have only two suggestions to make: First, that as we have in our law about all that is good, in future we should give the legislature of the State a rest. Too much tampering with a good thing is liable to injure it. Second, a resolution should be presented to the society, thanking that committee for the very faithful manner in which they have performed their duty, and the same spread in full on our minutes.

DENTAL EDUCATION.

Those of us who are in the habit of attending the meetings of the American Dental Association, and those who are connected with dental schools and boards of censors or examiners, are doubtless aware of the continued unhappiness that exists between those two organizations—the schools on the one side, and the boards of examiners on the other.

Three years since, in my address before this society, I made use of the following language:

"I learn from reliable authority that several of our prominent colleges are willing that their candidates for graduation shall be examined by their respective State boards at the same time the Faculty examinations take place, and when the candidate has passed both bodies satisfactorily that

the usual diploma be conferred, countersigned by the President of the State Board.

"I think that a diploma so signed should be accepted all over the United States. The Faculties think the proper time to stop the student is before, not after, graduation. This seems to me reasonable, fair to all, and entirely practical. A proper standard could be fixed, and the State board could see that this standard was reached by every candidate before graduation, thus doing justice to the profession, the public, the graduate and the reputation of our colleges, which we should endeavor to build up rather than pull down."

In my address last August before the American Dental Association, I made use of almost the same sentiments; and I am now happy to inform you that these suggestions have been put into practice by one of the three dental schools in our State—the Dental Department of the University of Buffalo—and I trust that ere long the New York College of Dentistry, and the New York College of Dental Surgery, the other two schools, will do likewise. I am informed by good authority that one of the dental colleges of Baltimore, Maryland, will soon accept this plan for their final examinations, and then in the near future we may have a national law, whereby a graduate of any reputable college can practice his profession in any State of the Union without passing another examination; and to this State, and to the Buffalo Dental College, should be given the honor of adding so materially to the future welfare and dignity of the Dental Degree.

THE WORLD'S COLUMBIAN DENTAL CONGRESS.

The movement to hold a Dental Congress in Chicago, Ill., August 15-19, 1893, inclusive, received its official status from the joint action of the Southern Dental Association, at its meeting in July, 1890, held at Atlanta, Georgia, and the meeting of the American Dental Association, held at Excelsior Springs, Mo., in August, 1890. The General Executive Committee was appointed by the two Associations to adopt rules and regulations, fix the time for convening the Congress, secure the place for holding the sessions, and make such other preliminary arrangements as it deemed necessary.

The work of appointing committees to promote the success of the Congress is finished, the permanent officers have been chosen, the honorary officers have been appointed in all foreign countries, and the time and place of meeting fixed.

A general invitation has been issued, asking the co-operation of the reputable dentists of the civilized world to meet with the dentists of the United States of America, at the time and place fixed, for the presentation of papers, both scientific and practical, covering the whole range of

theory and technology. It is believed that the newest discoveries and investigations and methods in physiology, histology, bacteriology, pathology, oral surgery, chemistry, materia medica, therapeutics, orthodontia, operative dentistry and prosthesis, will be presented to this Congress in a manner not heretofore attempted in any international gathering of a similar character.

It is with pleasure, therefore, that we appeal to the dentists of America to assist in this great undertaking, which promises so much for the future of dentistry and dental surgery, by placing its practical and humanitarian objects before the public at large. This Congress will be an educator to the practitioners of dentistry of such vast proportions, that few can realize the direct benefits that will accrue, not only to those practicing, but to the ones who deny themselves the opportunity to make history for the generations yet to follow.

The transactions of this Congress, when printed, will be a permanent record of scientific development, that may well serve as a starting point in future professional advancement, education, legislation and prophylaxis.

Nothing will be omitted which may add to the comfort and entertainment of those who lend their presence for the furtherance of the objects of this Congress, and such a programme of literary merit will be presented as shall reflect in the closest manner the past history and present development of dental science, including also the practical demonstrations of every phase of operations known. These demonstrations will be given by those best fitted by native ingenuity, education and technical skill, in bacteriology, histology, pathology, oral surgery and other more directly practical subjects, such as orthodontia, prosthesis, electricity and mechanical operations on the teeth, jaws and associate parts.

The facilities for meetings and demonstrations are ample to accommodate all who are entitled to admission to the Congress. The Art Palace is situated near the centre of transportation; it is isolated from traffic, and is well lighted and ventilated.

The general headquarters will be located within ten minutes' walk of the assembly rooms, No. 300 Michigan Avenue.

Desiring that every reputable member of the dental profession shall be identified with the Congress, the following resolution was adopted:

Resolved, That a payment of ten dollars (\$10) shall entitle one to the transactions and to membership, if eligible.

That a payment of twenty dollars (\$20) shall entitle one to the transactions and membership as above, and the medal.

That a payment of thirty dollars (\$30) or upwards, shall have all the advantages of the twenty-dollar subscription, and also recognition as a contributor to the financial success of the Congress.

That any student presenting a certificate from the dean or secretary of a reputable dental college be entitled to student membership, and also a copy of the transactions, on the payment of five dollars (\$5).

The official languages of the Congress shall be English, French, Spanish and German, and the papers shall be printed in the transactions, in the languages in which they were read.

Adherents of the Congress will address letters of inquiry to the secretary of the committee, in order to receive an official reply.

The profession in America must now assume the responsibility of making this Congress a success on the lines laid out by the General Executive Committee. This can only be accomplished by the immediate response of those who contemplate being present in person, or by financial contribution.

The committee urgently request an immediate decision from those proposing to attend, in order to facilitate the work of the various departments, and to reduce to a certainty the attendance from America.

Contributions of money should be made directly and at once, to the chairman of the State Finance Committee, for transmission to the treasurer, who will issue his receipt for the same.

GENERAL FINANCE COMMITTEE.

L. D. SHEPARD.

T. W. BROPHY.

A. L. NORTHRUP.

FINANCE COMMITTEE FOR NEW YORK.

A. L. NORTHRUP, *Chairman*, 57 West 49th Street, New York.

F. A. REMINGTON, 57 West 49th Street, New York.

O. E. HILL, 160 Clinton Street, Brooklyn.

CHAS. K. VAN VLECK, Hudson.

F. F. HAWKINS, Troy.

A. R. COOKE, 120 E. Jefferson Street, Syracuse.

FRANK FRENCH, 62 State Street, Rochester.

CHAS. S. BUTLER, 680 Main Street, Buffalo.

HENRY A. TOMPKINS, Utica.

To facilitate the work of the Finance Committee of this State, all subscribers are requested to make checks or money orders payable to Dr. A. L. Northrup, 57 West 49th Street, New York City.

In concluding my remarks upon this subject, let me draw your attention to the importance of lending any effort to make the World's Columbian Dental Congress a success, for as the time draws near for that great meeting, we are on the threshold of being recognized as an independent profession, and as the whole is no stronger than the weakest part, do not allow that weak point to come from the state of New York, but let each and every dentist from our State feel that on his pushing powers depends the success of this meeting, for he who doubts his own

powers shrinks from putting them to the test, while he who is convinced that he can succeed has already made the most important step in that direction.

And now, gentlemen, in concluding, I have briefly informed you of such matters as I deemed sufficiently important to demand your attention, and have made but few suggestions that I thought worthy of your consideration. Let me remind you that the responsibility and the success and welfare of this society do not rest with the officers alone, but with each individual member and delegate. It remains for us all so to direct the work of this, the Twenty-fifth Annual Meeting, that it shall be fruitful of good results.

ELECTRICITY IN ROOT FILLING.

BY S. B. PALMER, M. D. S., SYRACUSE, N. Y.

Remarks made before the Dental Society of the State of New York, at its Twenty-fifth Annual Meeting, held in Albany, May 10 and 11, 1893.

The March number of the *Dental Cosmos* contains an article under the above heading, read before the Chicago Dental Club, by Carl Theodor Gramm, M. D. I will give a brief quotation from the article, in order to help those who did not read it to understand the result of numerous experiments made by me in that line, as well as my conclusions, which are based upon close observations, extending far beyond the points brought out in the discussion of the paper.

"The operator is to consider the root ready for filling, to have the rubber dam in position, and the canal wiped as dry as possible. A copper canal point, just fine enough easily to fit the canal, and long enough to allow one end to remain distinctly visible, is inserted. By means of a storage battery (thirty-five ampere capacity), an electrode is brought to a bright red or white heat, and held in contact with the protruding copper point. If there be much moisture in the canal, a hissing sound is heard almost instantly. Contact may be maintained until slight pain ensues, and if necessary, renewed until the perfect drying of the root canal, and largely of the tubules, is obtained. The point may then be removed, and after the canal has been moistened with oil of eucalyptus, again inserted. An exception to the removal of the point is found whenever the canal or canals, as in the molar group, are exceedingly narrow. In these instances it will quite suffice to drench the floor of the pulp chamber with the eucalyptus, leaving the cone in position. The medicament will readily follow the point, and indeed pass beyond it, owing to capillary attraction. The heated electrode is again applied, with a view to increased germicidal energy, and to greater penetration of

the heated oil and its pungent vapor into the remotest recesses, into possible pulp remains, and partly into the tubules of the dentine. A sufficient quantity of base-plate wax is then packed into the pulp chamber, and for the third time the heated electrode is applied. Almost instantly the melted wax will follow the course of the point to its remotest end, and attracted by the oiled walls will penetrate every crevice presented."

The paper goes on and reviews, or gives reasons for, each step noted above, and it appealed to my reason as being the most efficient and scientific method of root filling yet announced. In the discussion it was suggested that paraffine be substituted for wax, which I used in the experiments, and also in practice. On reading the above, it seemed that nothing more could be desired. However, curiosity led me to see the thing done, and to learn what could and what could not be accomplished. One whole day was spent in experimenting, until at last success rewarded the effort, all of which convinces me that perfect root filling by almost any method stands higher in imagination than in performance.

The storage battery and electrode were obtained, canal points made, and numerous roots of cuspid and incisor teeth prepared as for filling in the mouth. A dry root was treated, and not only was the canal instantly filled, but the entire root or dentine became so permeated with either the oil or paraffine as to resemble ivory soaked in oil, thus fulfilling none of the conditions met with in the mouth. The roots were then soaked in water, when there was penetration only as far as the dentine became dry. A number of roots were filled, both with and without the eucalyptus, and when perfectly cool were split open. The paraffine used in the experiments was highly colored with vermilion. I soon learned that it was almost impossible to evaporate the moisture and dry the canal to the point of the cone. While the dentine would burn near the orifice, the conductivity of the copper was but slight when it was drawn down fine, like a hair broach. Again, when the oil was used, a portion of it remained around the point, filling the canal to the apex. It required more heat to drive out all the oil than would be beneficial to the tooth.

When paraffine was added, only the space was filled that was free from oil; that is, capillary attraction would not draw the paraffine into the oil. Where the paraffine and eucalyptus came in conjunction, the filling was a soft paste, generally located around the copper point. The principle was correct, but the results were not satisfactory.

Being desirous of witnessing the operation, some glass tubes or straws were held over a bunsen flame and drawn to fine points, the glass thread broken off, and with a sharp file a scratch was made on the enlarged or bell-shaped end of the glass, which would easily break off, leaving almost a perfect representation of an incisor or cuspid root. Any length, size or taper can thus be made, and that very quickly.

The experiments were resumed, and every phase could be distinctly observed. The same results followed as in filling natural roots. To my mind the hindrances came from a lack of conductivity of the fine point of copper. It was evident that two electrodes were necessary, one to dry the cavity or canal, the other to heat the point, when it is to be inserted to remain. I made an electrode of the usual pointed form, with the addition that the canal point, as well as a part of the electrode, was formed of platinum. With this addition, perfect root filling is a possibility. When the point is separate, it is not an easy task to insert and remove it, perhaps a dozen times or more, to dry the canal or volatilize the oil. With a stationary point there is no trouble. As seen through the glass, when driving moisture from the canal, it appears to be very difficult to boil the water the entire length of the metal, while with the lengthened electrode and a reciprocating motion—not to draw the point from the canal, but simply to free it from contact with the walls—it becomes heated instantly, and as may be imagined, either water or oil can be removed as far as the point reaches. Nay, more; by capillary attraction, in a degree the moisture in fine roots follows the electrode, and is thus evaporated.

The points I have used are made of pure silver or gold, first fitted to the canal, the end in the pulp chamber being bent at a right angle, so as to be drawn readily with a fine excavator. The point is warmed and coated with paraffine. When the canal is dried, the filling point is introduced, the end touched with the blunt electrode, and it is carried to its place. One thing is certain: where the rubber dam can be used, roots can be sealed up with any resin or gum that will flow with moderate heat. Should it be necessary to remove the root filling, apply the electrode and draw out the point, and with a fine broach the canal can be cleaned of the surrounding filling.

I believe this to be the best and quickest method of filling roots that has yet been devised. Not only is the root perfectly filled, but there is no danger of forcing any of the filling through the end of it.

REPORT OF THE COMMITTEE ON PRACTICE.

BY BENJ. C. NASH, D. D. S.

Read before the Dental Society of the State of New York, at its Twenty-fifth Annual Meeting, held in Albany, May 10 and 11, 1893.

In preparing for my report, I was confronted with the brilliant work of my immediate predecessor, Dr. Ottolengui, and I felt that I could not hope to furnish anything in the time at my disposal, that would be as

complete on any special subject as the reports he has given. I therefore determined not to follow any special plan, but to cull from the *Dental Cosmos*, *The International Dental Journal*, and *Catching's Compendium*, published since our last meeting, anything that might be of interest, and that would tend to bring out a discussion. The practice and opinions thus extracted I have tried to condense in such a way as to express in brief the ideas of the gentlemen whom I have quoted. If by such condensation I have unwittingly misrepresented their views, or failed to make them sufficiently clear, I trust that a discussion will set the matter right.

PULP CAPPING.

In a paper read by Charles Harker, D. D. S., before the joint meeting of the Pennsylvania and New Jersey State Dental Societies, July, 1892, entitled "Anti-Conservative Treatment of Exposed Dental Pulps," the writer clearly expresses his own valuable experience and the practice which has grown out of it. His experience in the line of pulp conservation is probably similar to that of the majority of those who have been in practice for five years or more. He advocates radical treatment in all cases of pulp exposure, except traumatic ones, where the pulp is slightly punctured in excavating, or where it is exposed by fracture of the tooth. He has no confidence in pulp capping when the exposure results from caries, but on the contrary says that pulps will frequently die when capped under the most favorable circumstances, and he is further of the opinion that a tooth-pulp, instead of being easily manageable, is so treacherous that we can never predict with certainty the results of capping.

His method of treating and devitalizing exposed pulps is much the same as that usually employed by careful operators. One point which he makes is worthy of attention, and that is that on the fourth day after application the arsenic is removed, the pulp entirely uncovered and a portion excised. It is bled freely to prevent discoloration of the tooth during the waiting time for Nature's process of separation of the dead portion, temporarily dressing it with iodoform and sealing with gutta-percha. The "pinking" which he speaks of, I have observed in a few cases, and it can, I think, be prevented in the manner recommended.

A case was recently presented to me for relief and treatment, which was probably regarded by the operator who first had the patient in charge as a case of successful pulp capping. The tooth was a lower second bicuspid in the mouth of a young lady, which had annoyed her for about five days, growing worse at night and preventing sleep. There was no swelling in the vicinity of the offending tooth, but it was decidedly tender to touch. It had been filled four years previously, according to the patient's statement, and by one of our most careful operators, who

recently left New York on account of poor health. The filling was of gold, nicely contoured, and apparently perfect. I hesitated to remove it, but my better judgment gave courage to my conviction, and on its removal I found a layer of cement beneath. The correctness of my diagnosis was at once proven by the peculiar fishy odor, characteristic of a dead pulp when not open to external influences. After applying a pellet of cotton wet with sal soda, I opened into the pulp chamber, and inserted a Donaldson bristle into the canal, wiped it out with soda and dressed with hydro-naphthol, leaving a loose pellet of cotton in the cavity. The relief experienced was immediate, and the next day the patient reported that the soreness had almost entirely disappeared. My second dressing was creosote and oil of cloves, and again loose cotton in the main cavity, making an appointment for four days later, when I filled the canal and inserted a permanent filling.

TREATMENT OF PUTRESCENT PULPS.

Dr. A. W. Harlan's method:

1st. Apply the rubber dam, and wash the crown with sodium-fluoro-silicate.

2d. Open the pulp chamber with sterilized drills, and wash the same with equal parts of peroxide of hydrogen and $\frac{1}{1000}$ solution of bi-chloride of mercury. He does not favor the removal of the putrescent pulp at the first sitting, but applies in the pulp chamber a dressing of myrtol and cassia (equal parts), and places over it a piece of blotting paper wet with liquid vaseline, sealing the main cavity with gutta-percha, which he perforates for the escape of gas, should any form. Four or five days later he cleanses the root canals under similar antiseptic precautions, and applies in the canals a loose dressing of myrtol, dismissing the case for another ten days, when he fills the roots with chloro-percha.

Dr. A. W. McCandless removes the pulp at the first sitting, after adjusting rubber dam, and applies similar remedies, treating at intervals of from one to four days, and at the third sitting filling with chloro-percha.

Dr. Arthur L. Swift, of New York, is careful to exclude saliva from first to last in the treatment of these cases. He removes the root contents at the first sitting, using sterilized instruments and antiseptic precautions, similar to those of Dr. Harlan. After a lapse of three or four days, his second treatment is followed by a dressing of cotton or silk, saturated with eucalyptol, packed tightly in the canal and sealed with gutta-percha. The case is then dismissed for about ten days. He fills the canals with oxy-chloride, or gutta-percha, at his final treatment.

Dr. George Evans does not believe it necessary to exclude saliva from the cavity or pulp canal in a case of putrescent pulp. He is, however, in favor of all antiseptic precautions after the removal of the root contents.

Dr. J. M. Porter, in a paper read before the New York Odontological Society, January 19, 1892, does not approve of the temporizing methods practiced by others. He would remove at the first sitting every portion of the putrescent pulp in the tooth, treating with iodoform and sealing up the cavity. He cannot comprehend how the process of disinfecting the tubuli can be accomplished, when the dead substance is allowed to remain. He believes in getting direct contact with the tubuli, washing out the canals repeatedly with alcohol, alternating with hot air, thus hastening the process of disinfection. To leave pulp canals unfilled longer than is absolutely necessary, he thinks is detrimental to the process of healing. In those teeth with dead pulps which have never manifested any symptoms of pericemental inflammation, he does not hesitate to fill at the time of second treatment, and in a few at the first sitting, especially if the patient has passed the age of forty years. In cases with fistulous opening, he thoroughly evaporates the moisture from the pulp canals with hot air, washes with alcohol and fills at once. He advocates the operation of alveolotomy, where it is not possible to get access to an abscess without enlarging the apical opening, thus anticipating Nature's process and giving the patient relief.

Dr. J. N. Farrar, in discussing this subject, says: "Nature is our best guide in these matters. She makes a fistulous drainage from the socket. Drilling through the gums and socket to the interior of the trouble is the only scientific plan of treating a case containing pus." In 1878, he lectured on the benefit of this treatment, and contributed eleven papers containing experimental detail.

Dr. Darby considers this operation of alveolotomy too uncertain, back of the six anterior teeth. He does not think it good practice to drill through the end of the root for the relief of acute abscess.

Dr. G. L. Curtis practices surgical treatment in alveolar abscess, both acute and chronic. He is an advocate of both alveolotomy and of root amputation, when indicated.

Dr. Van Woert advocates immediate root filling in all cases. If a case of apical pericementitis presents itself as a result of septic matter in the roots, he believes that by removing the cause and restoring the parts to a thoroughly aseptic condition, Nature will do the rest without medications or surgery. Of the operation of alveolotomy, he says: "I did not suppose there were any in this advanced age of surgery who would wait for the disease to produce a fistulous opening. The operation would seem unnecessary in most cases."

I would say that, personally, I have had no experience in root amputation, and question whether the patient is ever sufficiently benefited by this operation to pay for the pain and trouble. Of alveolotomy, I can speak more positively, having had most happy results from this procedure, in pericemental inflammations following root filling.

I have practiced immediate root filling in a number of cases in which there was no history of previous inflammatory conditions. In one instance I took considerable risk, without at first intending to do so. In excavating to repair a defective filling in a lower first molar, I found a mushy condition below it, and on removal of the entire filling I discovered that the pulp canals were putrescent. The patient was quite positive that the tooth had never given her any pain, and I proceeded to cleanse the roots, and filled them and the cavity permanently. On completing the operation, the patient complained of a dull, heavy pain, and suddenly recollected that two years previous an abscess had formed in the vicinity of this tooth, which had been lanced for relief. I was somewhat dismayed at this unexpected announcement, but concluded, after applying aconite and iodine to the gums, to make it a test case, as the patient was fairly healthy. The next day, I learned that the pain had entirely disappeared. This occurred January 18, and no discomfort has been experienced since, though I have seen the patient a number of times.

Dr. Carl Theodor Gramm, of Keokuk, Iowa, in a paper read before the Chicago Dental Club, November 28, 1892, entitled "Electricity in Root Filling," describes a method of carrying medicaments into the tubuli by the aid of heated copper points in contact with an electrode, securing thorough aseptic conditions by the application of oil of eucalyptus, and filling with heated wax, by capillary attraction.

THE HERBST METHOD OF TREATING PULPS.

This method, which Dr. Bödecker championed at the last meeting of this society, has not yet received the confidence and support of the profession, but it was, on the other hand, severely criticised by Dr. A. W. Harlan, in an article which he read last winter before the First District Dental Society; and Dr. Otto Arnold, of Columbus, Ohio, in a paper read before the Ohio State Dental Society, December, 1892, says: "If you would lay a foundation for success in tooth conservation, let your motto be 'Dead pulps must be removed.' Take no chances by imposing too much upon Nature." It seems unlikely that this manner of treatment will be much practiced in this country, unless it should be shown to have a scientific basis, and prove to be a reliable method of practice. The establishment of an easy means of overcoming the difficulties and uncertainties in such cases as those for which Dr. Bödecker has recommended it, is a consummation devoutly to be wished, but the profession must, to use an Atkinsonian expression, be convicted before they care to be converted to this method.

In a paper which appears in the current number of the *Dental Cosmos* (May, 1893), Dr. William E. Christensen, of Philadelphia, offers a defense of this treatment from a practical standpoint. He states that he is

absolutely without doubt of Dr. Herbst's success in this treatment, having himself practiced it for more than four years. He says that the method originated with Dr. Adolph Witzel, who commenced experimenting in this direction in 1872, and in 1874, at the Central Association of German Dentists, in Cassel, reported upon more than 180 successful cases. Dr. Witzel, after a twenty-four hours' application of arsenious acid, amputates the crown portion of the pulp, in the manner already mentioned. He recommends cleanliness and disinfection above all, and fills the pulp chamber with a strong antiseptic paste, prepared in such a way as to remain soft, over which he places a loose platinum cap, and then the filling. The action of the strong antiseptic makes the remnants of the pulp shrink, and remain as dry antiseptic bodies "a far better filling material for the roots than the purest gold." Dr. Christensen adds, that he believes this treatment, though simple, is at the same time scientific, and while he thinks it has not many partisans in this country, he believes that the perfect gold or tin fillings of the American systems are usually done only in imagination, or in the writers' papers, and even when done that they serve the purpose badly. He considers it almost impossible to fill roots perfectly with gold or tin, and even when the pulp is removed entirely, and the root filled with any antiseptic material, he is of the opinion that much of the after trouble is unconsciously caused by introducing septic matter into the root canals, or from other causes in manipulation.

He says that Dr. Herbst did not commence practicing his method with the special intention of saving the remnants of the pulp alive, but only with the object of saving the tooth. While the pulp residue may in some cases retain its vitality, the great success of the treatment is in the fact that it saves and preserves the teeth more easily and better than by any other method. Dr. Christensen, by the exclusive use of the Witzel method, had three to four per cent. of failures, chiefly in sixth-year molars, and most frequently in young and chlorotic girls. In four years he has not met a single failure following the Herbst method.

NITRATE OF SILVER.

Nitrate of silver has received an impetus through the published experimental results of Dr. E. H. Stebbins, of Shelburne Falls, Mass. It would appear to have a wide range of usefulness, and has for many years been applied to relieve sensitive conditions at the necks of teeth, and to obtund sensitive dentine. It is also used in the treatment of pyorrhea alveolaris. Its chief advantage, for the recognition of which it is conceded Dr. Stebbins is entitled to the credit, is as an abortive remedy in deciduous teeth when affected by caries. The only objectionable characteristic which has been mentioned, is its discoloring effect on the teeth to which it is applied. I think the strong metallic taste is also an unpleasant

feature. Dr. Bödecker recommends a salt-water wash, to neutralize the action of silver nitrate on surrounding tissues, which forms by combination an insoluble chloride of silver.

PYORRHOEA ALVEOLARIS.

Dr. Junius E. Cravens, of Indianapolis, at the last meeting of the American Dental Association, related a case of pyorrhœa alveolaris, in which after removing calcareous deposits and washing out the pockets with hot water, his treatment was the application of dilute sulphuric acid (1 to 10 of water) around the affected teeth, followed by the use of pulverized sulphur as a dentifrice. In his after treatment, he relied on the use of hot water and a ten-per-cent. solution of nitrate of silver in the pockets. The dilute sulphuric acid he thought aided in removing small particles of calcareous deposits, and stimulated a tendency to granulation. The teeth were slightly discolored around their necks from the use of the nitrate of silver solution. An apparent cure was effected in about eleven days, though the case was still under observation at the time of the report.

In discussing this paper, Dr. Barrett says: "The etiology of this disease has never been fully comprehended, or at least never fully expressed. Whether pyorrhœa alveolaris be solely and entirely a local manifestation of a local disturbance, or a constitutional diathesis, has not yet been determined. If there be predisposing constitutional causes, mere local treatment will be useless; if it is a simple local disturbance, if there be nothing beyond the very point of infection, if it is a disease simply of the soft tissues, then local treatment will suffice for all ordinary cases." He goes on to say: "I am not satisfied with any treatment which I have tried in the past, and I have used almost everything. I have never yet found that local treatment was sufficient in every case. In instances of true pyorrhœa alveolaris, I have been able to hold it under partial subjection, but the patients would return in three or six months with a new manifestation of the disease."

Dr. Rhein evidently believes that the local cure is dependent upon the removal of the constitutional cause, when the health of the patient is at fault, which should be determined before treatment.

Dr. Morgan believes it is a local manifestation of a constitutional disease, curable by constitutional treatment, or by the radical means of removing the teeth affected. He adds, "I do not remember ever having permanently cured a decided case of pyorrhœa alveolaris, unless I removed the tooth."

Dr. Harlan expresses himself thus: "It is much more local than many think. No one ever saw a case in which the teeth were extracted that did not get well. There is a strong probability that it is a purely

local disease, with many constitutional manifestations, most of them concomitant, but not the cause."

MATERIA MEDICA.

At the meeting of the American Dental Association last summer, Dr. A. W. Harlan, Chairman of the Section on Materia Medica and Thereapeutics, presented an elaborate report. Among other things he spoke of the properties of Europhen and tri-chlor-acetic acid. Of Europhen he said: "It is an agent calculated to take the place of iodoform, and the advantages claimed for it are, that it is non-odorous, non-poisonous, is five times lighter, and will admirably answer all the purposes for which iodoform has been used."

Tri-chlor-acetic acid is soluble in water or alcohol. It is an escharotic, a stimulant and an astringent. It is useful for softening or decalcifying seruminous deposits on the roots of teeth, without injury to the tooth substance. It is a local astringent and stimulant in a three-per-cent. solution. It is also recommended as an energetic caustic for the destruction of morbid growths, epulis, excrescences on the pulps of teeth, and for the removal of overhanging gum on third molars.

Dr. C. N. Peirce says that where there are nodules of calcific deposit on the roots of teeth, he has no hesitation in using the acid, even full strength, by means of a wooden spatula, and is enabled to cleanse the roots thoroughly. Applied into pyorrhœal pockets it will arrest the accumulation of pus with one or two applications, and as a root dressing will destroy pulp tissue and purify the root in a moment's time, more perfectly than carbolic acid.

At a meeting of the Second District Society, January 9, 1893, Drs. Van Woert and Kirk spoke enthusiastically of the success they had obtained in the treatment of pyorrhœa by the aid of this remedy.

Pyrozone has been strongly recommended as an antiseptic and bleaching agent, and later, sodium peroxide, for similar purposes.

FILLING MATERIALS.

I think it unnecessary to more than touch upon the subject of filling materials, as nothing new has been presented during the past year. Gold has, of course, the first place, where the structures of the teeth indicate its use. The next in favor is the combination of amalgam and gold. Of the plastic materials, amalgam still holds its own for permanency, while the mineral cements and copper amalgam are considered uncertain in their lasting qualities. Yet they all serve a useful purpose, and frequently do good service. Gutta-percha is an old and tried friend, when too much is not expected of it. Contour work is essential to the comfort of our patients, and should be practiced whenever practicable.

Crown and Bridge work calls for talent and ability of the highest order, and a comprehension of all the principles of operative dentistry, in both its mechanical and therapeutical aspects. The ideal work in this line that is occasionally seen by the general practitioner, proves its possibilities and usefulness, and should stimulate to the accomplishment of like results.

A report of this kind is necessarily incomplete, and there are probably many points untouched which should have received attention. If, however, what I have presented seems of sufficient importance to bring about a discussion of interest to this meeting, I think your committee will have filled its office.

REPORT OF THE CORRESPONDENT.

BY RODRIGUES OTTOLENGUI, M. D. S.

Read before the Dental Society of the State of New York, at its Twenty-fifth Annual Meeting, held in Albany, May 10th and 11th, 1893.

The report this year, as last, is a compilation of the opinions of experts upon a question of practice vital to us all. I allude to the treatment of necrotic conditions in the oral cavity.

I addressed a letter to ten eminent dentists, and to an equal number of prominent oral surgeons, with which I enclosed the following communication :

A suit for damages was recently brought in a Brooklyn court against a New York dentist, in which the claim was, that a root had been improperly crowned, so that when finally lost, necrosis had occasioned the loss of a part of the jaw and an adjacent tooth. An affidavit from the attending physician stated in substance, that when called the patient was in bed with high fever, and great inflammation about the teeth. He treated the patient for several days, reducing the fever and enabling her to get out of the house, when he took her to a dentist and had the teeth extracted. The defense claimed that the loss of bone was the result of delay on the part of the physician, who should have called in a dentist and had the teeth extracted at his first visit. On this point three dentists testified for the defendant that the physician had erred ; that the teeth should have been removed, despite the inflammatory symptoms, and regardless of the presence of necrosis. They argued that the teeth were the source and cause of all the irritation, and should have been removed promptly. The expert for the plaintiff, also a dentist, re-called in rebuttal, testified that the physician's course had been a wise one. That if necrosis were present, or if caries were present, with a possibility of necrosis ensuing, it would have been hazardous to remove the teeth during the continuance of the fever, and in the presence of great inflammation. He claimed that the teeth were no longer involved ; that though the primary cause of the disturbance, the disease had now left the roots, and

was seated in the bone itself. He predicted that had the teeth been removed, the necrosis would have spread to other teeth. In explanation, he claimed that the wound left after removal of teeth from a necrotic jaw is continuously open until the necrosis is eradicated; that these gaping wounds offer free access to further infection, and that therefore the retention of the teeth is often advisable, the operation being rather upon the necrotic sequestrum and carious bone, the teeth being removed, if at all, after fever inflammation and necrosis have been controlled. He even claimed that premature extraction might endanger life.

Subsequently to this trial, a prominent gentleman of Philadelphia read a paper, in which he advocated the extraction of diseased teeth to prevent spread of disease. He is reported in the *Cosmos* for April, and the following paragraph appears on pages 278-9:

"There was recently brought to my office, by his family and consulting physicians, a young man suffering with severe alveolar abscess upon the right lower first molar. The second molar, they said, had been extracted about ten days before, with no relief resulting therefrom. The inflammation by this time had extended from the wisdom tooth anteriorly to the cuspid, with evidence of necrosis about the first bicuspid. I recommended the removal of the first molar and both bicuspids, hoping it would arrest the progress of the disease, though personally I was in doubt about saving the cuspid. I have found in cases of progressive necrosis, that it is necessary to remove at least one tooth beyond the line limiting the inflammation, but in this case we all desired, if possible, to save the cuspid. Upon operating, I found the root of the second molar had not been extracted, and was the origin of the whole trouble. This, together with the teeth above mentioned, was removed, and the bone found perfectly necrosed from the wisdom tooth to the septum between the bicuspids. Hope was entertained that the disease would go no farther, but in a week the physicians brought him back with the characteristic blueness and spongy condition of the gums extending to the right central incisor, which necessitated the removal of the cuspid, lateral and central, and the cutting away of the process. The parts were healing nicely where the former operation had taken place. Within a week a third visit was made, with the disease extending to the left cuspid. The patient by this time was very much run down, and fears were entertained for his recovery. I urged that the operation should include both left bicuspids, though they did not show any evidence of disease. With this we succeeding in checking its progress. The poor fellow had lost twelve teeth, and the whole alveolar process about them, as a result of allowing the root of one abscessed tooth to remain."

This history is given as a warning against the non-extraction of teeth, but this question arises: Is the last statement of the essayist a true conclusion? That is, did the extensive necrosis and loss of twelve teeth result from the non-extraction of the abscessed root; or on the other hand, was it the result of his wholesale extraction of neighboring teeth, instead of the removal of the second molar root only, and proper operation upon the necrosis?

This case, cited in an argument to prove that diseased teeth should be promptly extracted, reports exactly the result prophesied by the expert in the lawsuit, in that the necrosis spread, and life was endangered.

The final determination of this serious question is one of the utmost importance to our profession, not only in our actual labors, but in a decision of what shall and what shall not constitute mal-practice in such a case.

Will you therefore express your opinion for the benefit of the New York State Dental Society, upon the following points:

(a) Where necrosis is present, or suspected, with high temperature, and extended inflammation, would you extract the teeth promptly, or would you reduce the temperature and inflammation first?

(b) There being no high temperature, but inflammation and necrosis, would you remove the tooth and adjacent teeth, or would you retain them, operating upon the necrotic tissues only?

In reply to the above, Dr. R. R. Andrews first wrote me a brief note, saying that he thought his opinion hardly worth quoting, but added: "My judgment would be at once to remove the cause, afterwards reducing the temperature and treating the inflammation."

A few days later he kindly wrote me again, inclosing a reply to my queries from Prof. E. W. Branigan, who is in charge of the Infirmary of the Boston Dental College. Dr. Andrews says of him: "He is as much an authority as any one whom I know in the dental profession."

Prof. Branigan writes as follows: "In answer to the questions forwarded, I should say, (a) extract at once, but take the precautions that a surgeon would take in an operation for necrosis. The use of an efficient antiseptic before, during and after the operation is, I think, omitted by the dentist more often than it should be; (b) I should remove all diseased tissues, and try to keep adjacent tissues in a healthy condition."

The following is from a reply sent by Prof. William Taft:

"In reply to your first question, I will say that if there were inflammation and high temperature in a patient whose history would indicate a scrofulous diathesis, which to a singular degree favors the determining cause of either syphilitic or tuberculous necrosis, and which would lead me to suspect necrotic sequelæ, I should advise extraction as an abortive measure, and would lose no time in endeavors to reduce the temperature or inflammation. If the irritant is removed, these will subside of themselves. If the necrosis has already advanced, it is a matter of indifference whether the tooth or teeth are removed or not, as the disease would run to its limit and the teeth would be no factor in the process. But as they become painful and annoying to the patient, and interfere with mastication, it would be proper to extract for his comfort. To your second question, if the tooth were devitalized and acting as an irritant it should be extracted."

Prof. James Truman sends me the following opinion:

"My experience and reasoning have convinced me that after the necrotic condition has been established by osteitis, or acute inflammation

of the periosteum, the teeth do not affect the progress of the disease and are not a factor in the treatment. The question of their retention or extraction is one to be considered carefully, and is largely dependent upon the tooth or teeth, and the extent of the lesion, and whether the necrosis is confined to the alveolar process or has extended to the body of the jaw. There is an important distinction to be made here, for the former appears to be self-limiting and not ordinarily very extensive, while the latter may involve the entire maxilla. Where the alveolar process alone is involved, the teeth may be retained until removal of the dead bone and reformation of tissue. My experience has not been very favorable in this, for the teeth having lost their attachment have become to that degree a source of offense. The difficulty is to determine the presence or possibility of necrosis. The diagnosis and prognosis have each an element of doubt until well known symptoms are established. I have tried extraction of the teeth, as well as their retention, without any positive results in either case. If a tooth must be removed, it is immaterial whether it be extracted during high temperature or at a later period. The origin of necrosis is not as yet clear to my mind. The explanation ordinarily given that necrosis occurs as the consequence of any cause which sufficiently impedes the circulation in the neighborhood is doubtless true, but it is very frequently difficult to assign any explanation leading to the inference that it had arisen idiopathically. Such an idea, however, cannot be entertained. Inflammation does not always produce it, or else there would be no escape for patients in alveolar abscess. Constitutional conditions favor it, and again it will start unquestionably from infection, though even that is difficult to prove, as a recent severe case demonstrated. There is no question but that necrosis once established in any bone, it will progress independently of all treatment or surgical interference. It eventually is checked by natural processes; but the cause of this is by no means satisfactorily explained. The following, from Holmes's Surgery, gives that generally accepted: 'The periosteum, or medullary membrane, as the case may be, separates from the dead bone and becomes inflamed, a quantity of ossific deposit (more or less, according to various circumstances) is poured out between it and the dead bone, and this deposit soon becomes converted into new bone, forming a sheath over the dead portion, by which the latter is enclosed or invaginated.' My own view is, that eventually it will be found that pathogenic germs are the cause of its origin. Its progress then can be understood, and the reason why it is 'impossible to lay down any rule as to the time at which a sequestrum may be expected to be found separated from the rest of the bone.' In a severe case coming under the writer's care, the disease began in the process of the right superior wisdom tooth. This tooth had been extracted by another dentist. The history of the

patient was clearly syphilitic. The progress was continuous but slow, finally involving half of the superior maxilla. It stopped anteriorly at the lateral incisor. Why a line of demarcation should be thrown up at that central incisor will remain, it is presumed, without explanation, unless the germ theory be accepted. In a recent case, with no special history, necrosis began in the right cuspid. An attempt had been made by a village practitioner to remove a bicuspid root. The presumption is that the periosteum became infected. The disease rapidly progressed until, when last seen, it involved the left side as far as the canine. Everything was tried to stay its progress, such as extracting in advance, and careful antiseptic treatment, without avail. My experience in surgical interference has always been, if not bad, at least of no benefit. Even where portions of the jaw bone have been removed in advance of the progress of the disease, the results have been of no value. Hence the extraction of a tooth, as in the case mentioned, must have been merely a coincidence, as I cannot regard it as having any effect upon the final result. My treatment has always been of a waiting, antiseptic character, preferably using hydrogen-peroxide and a continuous wash of phenol-sodique. By this means I have kept patients very comfortable for months, or until such time as the sequestrum became loosened or ready for removal. To sum up the answers to the queries propounded, I would say: (a) I would extract teeth promptly, with high temperature, but without any expectation of the result being affected one way or the other; (b) I would remove the teeth, there being no high temperature, as my judgment dictated at the time."

Prof. W. C. Barrett writes:

"(a) Extract the teeth promptly, as the source of the diseased condition, and as the continuously irritating cause.

(b) I cannot conceive of much inflammation without more or less of inflammatory fever, but as nearly as I can comprehend the case, I should remove the necrosed bone and tissues, and with that might come the teeth which were involved. I am not ready to say that I would remove either immediately, as the symptoms might point to the formation of sequestrum and slough, and in that case I should simply assist that solution of the difficulty. If I found it necessary to operate, I should endeavor to go back far enough to reach the limit of the extreme osteitis which would be present.

Of course the constant use of antiseptic washes and dressings would be indicated, with such constitutional treatment as the case demanded, whether the predisposing cause was in a distinct diathesis, or a condition of atony.

It is impossible to make a clear diagnosis of any case, to give an intelligent idea concerning the prognosis, or to indicate any positive course

of treatment, without seeing and watching it from day to day, and taking note of the many and constantly varying conditions which govern the course to be pursued."

Prof. G. V. Black sends the following :

"In the letter received from you to-day, you relate two cases of necrosis of portions of the bones of the maxillæ which seem to have resulted from alveolar abscess, and you ask my opinion as to whether or not the offending teeth should be extracted in the stage of inflammatory movement and fever which usually accompany these cases.

In answering your questions I cannot now go much into detail, but will give my opinion in brief. The danger of extensive necrosis in these cases principally depends upon two factors. First, the violence and duration of the inflammatory movement, and of the rise of temperature accompanying it. Second, the physical condition of the patient.

The character of the infection is probably important, but we have not as yet sufficiently accurate knowledge of this variation in the different cases upon which to base a definite opinion.

The inflammation is due to infection from the root canal, either not filled, imperfectly filled, or from secondary infection through the blood, in an old and imperfectly healed abscess. In any case, either the root canal or the tissues immediately surrounding the apex of the root contains the active or exciting cause of the trouble.

Therefore, theoretically, the immediate removal of the tooth, and with it the exciting cause of the difficulty, so far as may be, is demanded in all cases in which the conditions seem to threaten serious injury to surrounding parts. I should say that the greater the inflammation and the higher the temperature, the more urgent the demand for immediate extraction. I speak now of the stage of active inflammatory movement, not of the stage of suppuration following it.

My own practical experience in these cases most strongly supports the theoretical deductions. Within my observation, serious necrosis following extractions during the most severe inflammatory movement have been exceedingly rare, as compared with those occurring where extraction has been delayed. Relief following extraction, and the apparent prevention of the further spread of the inflammatory movement, has been so general that I have no hesitation in saying that this rule should usually be followed.

Now, as to the second point, the condition of the patient. In most cases of extensive necrosis from alveolar abscess or other cause, there is evidently a constitutional taint, which may be temporary, and on account of some infection of the general system, which under favorable conditions would soon pass away, but which favors the progress of suppuration. This condition, or better, those conditions, for I do not suppose

it to be always the same, are not very directly under the control of the physician, and judgment as to their influence can not be definitely made in advance. We often see in these conditions metastatic abscesses occurring, and necrosis taking place in different parts of the body, without apparent local cause. If such a condition be recognized, or strongly suspected, certainly it would be wrong practice to allow an active inflammation to progress from a known point of infection so easily removed as the root of a tooth.

The danger of infection after extraction is hardly to be considered. Of course infection of a grave character might occur after extraction. I have seen several such, but when we consider the number of extractions that occur, certainly the number of serious infections following are not sufficient to deter one from extracting a tooth in a case of special necessity.

When extraction has been unavoidably delayed until suppuration is in full progress, and pus is discharging, the demand for immediate extraction is not so urgent, and in many cases may well be delayed. Yet, even in this case, extraction should be the general rule, though it cannot be expected that it will prevent an injury that is already accomplished.

As to a progressive necrosis, of which you speak in one of the cases you recite, this always has a systemic cause back of it. Even though the original cause may have been strictly local, there has been more or less general blood poisoning, or general infection, before we have progressive necrosis."

In the above, Prof. Black distinctly tells us that he speaks of the inflammatory stage only, and not of the suppurative stage which follows. The whole tenor of his letter is in favor of extraction. In the American System of Dentistry, however, on page 950, volume I, I find that he says: "If this lesion is discovered early in the case, the parts should be well cared for until by natural process of absorption the necrosed portions are loosened; they should then be carefully removed. I have learned by clinical experience, that much of an alveolar process may be destroyed by necrosis from inflammation, without necessarily destroying the hope of saving the tooth. Many of those cases that present a very bad appearance, heal with surprising facility, with a little care." He then describes a case from practice in which the buccal plate of the alveolus and the septum between two or three teeth were lost by necrosis, the teeth being retained only by wiring, they had become so loosened, and yet Prof. Black succeeded in saving the teeth and restoring the process about them. The antagonism between these two opinions from one authority is more apparent than actual, as I must explain, rather than be thought to raise a quibble in order to lessen the value of the advice given in Prof. Black's letter. His direction for extracting is, as he says,

during the acute inflammatory movement, whereas the teeth which he saved came to him during the suppurating stage. Yet in face of the possibilities of salvation which he himself points out in the secondary stage of the disease, might we not hesitate to follow the advice of extracting during the primary stage?

Prof. David W. Cheever writes:

"(a) Incise — leeches — salines — release pus — wait.

(b) Remove all teeth which were loosened by necrosis; operate on the necrosis *after* the sequestrum has loosened. Always incise the soft parts, cleanse and irrigate from the first."

Prof. Carl Heitzman writes as follows:

"In reply to your questions, I would say that whenever necrosis of the alveolar process threatens, all that the dentist is allowed to do is to extract the broken root, which as a rule is the primary cause of the suppurative periostitis preceding necrosis. All the teeth involved in the process of periostitis should be left in place, until falling out at the slightest exertion of mastication. That the teeth should be extracted when the periostitis is progressive, in order to check the spreading of the inflammation, is an altogether mistaken idea. Some twelve years ago I had an attack of suppurative periostitis, resulting in necrosis of the left side of the lower jaw. The trouble was caused by a broken root of the first left inferior bicuspid. The inflammation was intense, the fever high. In fact it was the worst ailment I ever experienced in my life. The broken root was extracted, with the result that the second bicuspid became loose and fell out. A few weeks afterward a necrotic piece, almost half an inch in length and a quarter of an inch in breadth, was loosened and removed with my fingers. The first molar, a large healthy tooth, had lost the socket of the anterior root, but the posterior remained unchanged, and is ever since fastened in its socket, keeping the tooth useful. This fact plainly shows that the too hasty extraction of teeth during suppurative periostitis is not a legitimate procedure. In this assertion I am supported by Prof. Rose, of Tübingen, Germany, who after an extensive experience in necrosis of the jaws, claims that we should abstain from the extraction of teeth, even in the worst cases, since after elimination of the necrotic bone, the teeth, even though much loosened, may become impacted in newly formed bone tissue, and remain serviceable for a lifetime."

Prof. Roswell Park, of the University of Buffalo, answers thus:

"Absence from town, with many cases and duties when at home, have conspired to cause unavoidable delay in replying to your favor of the 30th. Let me now say:

(a) I have never regarded high temperature, local inflammation, or even gangrene, as anything but existing and urgent reasons for getting

rid of whatever necrotic material may be present, either as active or concomitant cause; and I believe this general principle to be as valuable in dental work as elsewhere in the body. Dead tissue of any kind means septic organisms in overwhelming numbers, and removal of the same means riddance of exciting causes of inflammation, and toxic infection. The *first* indication is, then, to remove such material as thoroughly as possible up to a limit where tissues appear so healthy as to be capable of resistance to further encroachment. Here is where the greatest judgment is called for, in properly estimating these appearances.

(b) I think the above covers the answer to your second query. I would remove all necrotic tissue, whatever it were, and however widely it might extend, and I would then reinforce this measure by such active cauterization of the parts as to make some active bactericidal agent (bromine, or Zn Cl. e. g.) penetrate and saturate the surrounding tissues, and incidentally sear and close the mouths or outlets of the absorbents.

I think no such operations on the mouth, as your paper mentions, should be done without abundant use of antiseptic agents for some days thereafter."

This ends my list of replies on hand. A few gentlemen wrote, begging to be excused for lack of time. Two replies expected from Europe may reach me in time to be added in a supplementary report. Dr. George Fowler, one of the most eminent oral and general surgeons in Brooklyn, promised me a reply, but I presume pressure of business has prevented. In a conversation with him recently, he stated most positively, that in the presence of necrosis the teeth have ceased to become a factor, and that extraction or retention would probably have little effect upon lessening the progress of the disease. He condemned the idea advocated by Dr. Thomas in the quotation which I made from his paper, wherein he says that in progressive necrosis it is wise to remove one tooth beyond the extreme line of inflammation. Dr. Fowler claims that thus to remove a healthy tooth, rather than the limiting of the disease, simply offers fresh exposed territory for infection, a hazardous procedure in the presence of a suppurating disease in adjacent territory.

I believe that the publication of the above letters presenting divergent views adjacent to each other, will be of value. It will attract attention to the fact that we have much yet to learn before we can know. And the fact is most emphatically here shown, that of necrosis we know deplorably little. Prof. Truman gives us a most valuable expression of opinion. Yet though he says that extraction cannot be looked upon to limit the disease, and though he admits that surgical interference has been baneful, or at least ineffectual, and though he cites two extreme cases of progressive necrosis, in the history of each of which there is a report of extraction during the primary periostitis, nevertheless he sums up by advising extraction.

It seems to my mind that extraction in the presence of progressive periosteal inflammation, where suppuration threatens as a certain sequence, is a purely empirical practice. It is a doing of something when we know not just what to do. Our literature is full of just such cases as that of Dr. Thomas, the two cited by Dr. Truman, and Dr. Heitzman's personal experience, and yet the historians usually fail to see any connection between the extraction and the subsequent extensive necrosis, as a simple matter of cause and effect.

My own knowledge on the subject was first acquired from the teachings of Dr. Atkinson. I will relate a case which will be instructive. A number of years ago, I attended a meeting of the New Jersey State Society, at Asbury Park. I was down for a clinic, and a lady boarding in the house was brought to me as a patient. Examination showed that there was a suppurative periostitis present about the central, lateral, and cuspid, on the right side above. Her temperature was high; in fact, she had risen from bed to attend my clinic, hoping to get the relief which she failed to procure from the local practitioner. I sent her back to her room, and called Dr. Atkinson to accompany me in consultation. We decided that necrosis was already present. She asked Dr. Atkinson if it would not be the quickest way just to have the teeth extracted. "Madam," he replied, "that will be the quickest way to lose your jawbone, and perhaps your life." She entrusted her case to me, and I accompanied her from Asbury Park back to New York. Arrived at her home, she requested a consultation with her physician, and an appointment was made for the following morning. To my disgust, I found this physician to be a homœopath, and a fossil. He declared that he could cure the disease without my assistance, and I retired from the case. Two days later, as I subsequently learned, three loose teeth were extracted, and two months later the greater portion of the superior maxilla was removed by operation, having been destroyed by progressive necrosis.

It is a matter of wonder to the layman why men of prominence can always be found who go upon the witness stand as expert witnesses, and under oath testify to diametrically opposite medical facts. The explanation of this is simple. There are very few, if any, facts in medicine. Theories predominate, and these theories are dependent upon the varied experience of the men holding and teaching them. In the matter of necrosis, let us suppose that a perfectly good operator and scientific, conscientious gentleman, should follow the practice of immediate extraction, and should do so for, say ten years, without a mishap. Would he not be entitled to swear that extraction was the proper course of treatment? Obviously he would. But suppose that on the day after, he extracts teeth under similar circumstances, and the patient grows rapidly worse, losing a large part of the jaw. Suppose that in his next case

similar treatment resulted in death, as once occurred in Chicago, would that gentleman testify in favor of immediate extraction the next time that he was called? I think not. Thus it is, then. Those who have not seen evil results give us the negative testimony that extraction is a safe treatment, though oddly enough they do not explain what good accrues from it. Those who oppose extraction give us positive evidence based upon experience.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

TWENTY-FIFTH ANNUAL MEETING HELD IN ALBANY,
MAY 10 AND 11, 1893.

The quarter-centennial meeting of the Dental Society of the State of New York, was held in the Lecture Room of the Young Men's Christian Association Building, in the city of Albany, commencing May 10, 1893, at 10 o'clock A. M. After the usual routine business of the opening, the secretary read the regular reports from each of the eight District Societies, with a list of the delegates appointed by them. With the exception of the Fourth, all seemed to be in a flourishing condition.

The President then presented his annual address. (See page 130 of this number.) After its reading, it was upon motion referred to a special committee of three for consideration.

Dr. H. G. Myrick, of Brooklyn, who for many years has faithfully served the Society as its treasurer, tendered his resignation as a member of the society, as he was about to withdraw from active practice. Much regret was expressed at the necessity for this step, and Dr. Myrick, upon motion to that effect, was unanimously elected an honorary member. The remaining time of the forenoon session was devoted to the transaction of necessary business, and to the consideration of the regular reports.

The report of the Board of Censors (Dental Examining Board) was presented. It showed that twenty candidates for the degree of Master of Dental Surgery had presented themselves. Of these eight had successfully passed the examination and were recommended for the degree.

The Board recommended that the Dental Department of the University of Buffalo be formally recognized, and its name added to the list of approved colleges.

Dr. C. W. Stainton, of Buffalo, moved in amendment that the latter part of the report be stricken out, and proceeded at some length to give his reasons therefor.

Dr. Barrett called upon Dr. Frank French, the chairman of the Board

of Curators of the school, and a member of the Board of State Censors from the time of the organization of the State Society, twenty-five years ago, to report upon the condition of the school as they found it when the Board of Curators attended the commencement exercises.

Dr. French said that the Board of Curators, which comprised the members of the Board of State Censors, or State Examining Board, had visited the school and investigated its facilities for teaching, and had examined its graduating class. The curriculum had previously been submitted to and approved by them. So far as the general equipments of the institution were concerned, he questioned whether it had its equal anywhere in the world. He was aware that this was stating it very strongly, but certainly in this country he believed it unapproachable.

The examinations were very far in advance of what he had been led to expect, and were nearly perfect. In anatomy and pathology he did not think they could be improved upon. They were simply wonderful. After the examinations were finished, the curators had nothing but words of praise and commendation.

Dr. William Jarvie, one of the State examiners, said that there seemed no question that the college was reputable and ably managed. With any local dissensions or jealousies this society had nothing to do. Concerning its formal recognition, there ought to be no question in the minds of any one present.

The amendment striking out that part of the report regarding the Buffalo School was put and lost, when the original report of the Board of Censors was adopted. Prof. C. A. Allen and Dr. G. J. Frey then presented their credentials as representatives of the college, and took their seats as members.

AFTERNOON SESSION.

A paper was presented by Dr. V. H. Jackson, of New York, entitled "Methods of Correcting Irregularities of the Teeth." It was illustrated by a large number of charts, which were successively presented in a panoramic manner, by means of an ingenious device originated by Dr. Jackson. The paper was a recapitulation and systemization of the methods and devices heretofore presented by the author. An abstract of it would be incomprehensible without cuts of the charts which accompanied it. These will be given in full in the *Dental Cosmos*. The methods devised by Dr. Jackson are familiar to many, and consist in the use of piano wire as the source of power in moving teeth, that being anchored by means of what Dr. Jackson denominates a "crib," itself formed mainly of the wire. He does not use plates of any kind, and depends principally or entirely upon bent spring wire to take the place of jack-screws, traction-screws, elastic ligatures, and other devices used in orthodontia. The charts presented were illustrations of his use of

piano wire and the "crib," in the different forms of irregularity to which teeth are liable.

DISCUSSION.

Dr. F. E. HOWARD has met with the most gratifying success in the use of Dr. Jackson's appliance. He is able to prepare and adapt it in many instances without taking any impression of the mouth. Patients wear it with less of discomfort than they can any other.

DR. W. C. BARRETT: I have been for a number of years acquainted with the methods employed by Dr. Jackson. When I first saw the device which he employed in one very bad case, it seemed to me perfectly incredible that so much should be done with such simple apparatus. I could scarcely credit the fact that the fine wire used without any plate whatever, should have been able to overcome the great difficulties presented in this special instance, and I so expressed myself. Fortunately, before I left his office the patient came in, and I was thus enabled to verify the models by the mouth itself. It was another sermon from the text simplicity, and again exemplified the truth, that complicated apparatuses are out of place in the mouth. It requires but little force to move any tooth, if it be but intelligently applied.

Last winter, Dr. Jackson visited the dental school in Buffalo, and to the great delight and profit of the students, gave a series of clinics and demonstrations. I was present at the most of them, and can bear testimony to the readiness with which men may comprehend the whole of the principle involved. Within a week of the time of his visit, the demonstrator told me that there were about half a dozen of the Jackson appliances in the mouths of patients of the Infirmary, and that all were doing the work in an entirely satisfactory manner. Students were enabled to prepare and adapt the Jackson cribs after having seen them made but once. I was further informed by the demonstrator in charge, that all of the complicated and ingenious machinery that had been adopted for the course, with one exception, had been thrown aside, and the Jackson devices adopted in their stead. The single one retained was kept in the course to teach students how to cut right and left handed screws, and to make gold and silver appliances, and not for really practical use. This indicates how easily the system may be comprehended and prepared.

Dr. WILLIAM JARVIE thinks the profession owes a debt of gratitude to Dr. Jackson for devising this simple, easy and effective method of correcting irregularities of the teeth. Some who have tried it have thrown it aside as beyond their comprehension and skill. But a little patient effort will enable any one easily to make it, and a few moments' explanation from one who is acquainted with it, makes the construction as simple as that of any other possible device, and certainly its effects are marvelous.

A child came to him, trembling and crying, full of fear because of previous experience with regulating appliances. In two months from that time, by the use of a Jackson appliance, that child went out of the office with the teeth as regular as could be wished, and that without any pain or serious annoyance of any kind. She came to the office when necessary, as cheerfully and as willingly as she would go to the photographer's. The case was one of protrusion of the four incisors, and there was no elongation whatever in their regulation. This is a very common complication, but in the use of this apparatus there was neither elongation or discomfort from first to last.

Dr. CAMPBELL: Did Dr. Jarvie find it necessary to remove any teeth?

Dr. JARVIE: I did not, as there was no necessity for it, and that is sometimes another great advantage in using the crib system. There is also the possibility of keeping the mouth and apparatus perfectly clean, and besides it is easily and readily removed and replaced. But children will not remove it and leave it out, because they do not find it burthensome or troublesome.

Dr. V. H. JACKSON said in closing the discussion, that the first thing for any one who desires to become familiar with this system is to learn the method of attachment. He had never seen teeth so short that he could not fix the apparatus firmly. A case was lately sent to him as a kind of challenge to the system, for the teeth were so short that they scarcely reached below the line of the gum margin. But to these were attached a crib that was so firm that the patient could not remove it. This is, however, not the usual way, as it is better to leave it so that it can be easily detached.

Dr. HOUGHTON: Does Dr. Jackson always use piano wire?

Dr. JACKSON: I commonly use German silver for the base wire, and find it quite as good as spring gold. But nothing is as well adapted for the spring portions as piano wire. For the base wire we need something that will be firm and inelastic. Many fail by using a base wire that is too light. For the crib itself, which is the part that attaches the apparatus to the tooth, piano wire is best, and that should be of a small size. It is a mistake to use large wire for any of the spring parts.

PRESIDENT WALKER: We should be ready to acknowledge it when we have received any valuable assistance from a brother dentist. We are too apt to keep that to ourselves, and to claim the credit for it. I had three cases of regulation, which it was necessary to finish up within a definite time. I was very distrustful of my ability to get through with them by the use of any appliance that I was acquainted with, and I took them to Dr. Jackson, who advised and assisted me, and in less than three months those cases were finished to my entire satisfaction, and I here wish openly

and publicly to acknowledge the great service done me by Dr. Jackson, and the wonderful effectiveness of his method.

The report of the Committee on Practice was presented by Dr. B. C. Nash, of New York. (See page 137.)

DISCUSSION.

Dr. M. L. RHEIN: The report is a creditable one. There is one point of especial interest to me, and that is the possibility of the unexpected discovery of a dead and perhaps putrescent pulp in a tooth, after capping—discovered, perhaps, by a kind of intuition. The longer I practice, the more am I convinced that there are more of such cases than we suspect. A pulp may remain quiet for years, when suddenly a volcano will burst forth. The practical point is, that we should use greater care in determining the condition of the pulp, when a capped tooth subsequently falls into our hands, and if it be dead that we should give it the proper treatment. For the past few years I have been able positively to determine this condition by the use of chloride of methyl spray. Ice water is not sufficient to form an unerring guide. I now slip a bit of rubber dam over the suspected tooth, and an application of the spray will instantaneously and unmistakably reveal its condition. It needs but a single instantaneous blast to do this.

Dr. A. H. BROCKWAY: Dr. Richmond describes a method of filling the roots of teeth, which makes the use of gold and tin for that purpose seem very cumbrous and absurd. It consists in melting a piece of hard wax into the roots by means of an electrode. This material seems admirably adapted for the purpose, and certainly the method must drive it into every minute ramification of the root.

Dr. S. B. PALMER: The method of inserting a copper point into a root, and then touching it with an electrode for the purpose of drying out the root and melting into it the wax, is certainly excellent. But I have found paraffine better. I believe that this is the coming method of filling roots, and that in a very few years the use of the electrode for drying, and melted paraffine for a filling, will be almost universal among good operators.

[The methods adopted by Dr. Palmer are detailed at length in an article by him on page 135.—EDITOR.]

Dr. A. R. STARR: Concerning bleaching agents, I lately filled a dead tooth, and used a How screw-post for retaining the filling. It subsequently became as green as grass. If any one can tell the reason I should be glad. I removed the post and endeavored to bleach the tooth, using different methods and repeated efforts, and would apparently suc-

ceed, but each time, no matter what agent had been employed, in a few days the green color would return again.

Dr. BARRETT: The color must have been derived from the post, which was made of some base metal. A chemical action left a salt which permeated the dentine and stained it. The bleaching agent discharged the color for the time, but a few days were sufficient for further oxidation, or chemical action, and the color was reproduced. If the bleaching had been continued until the metal was entirely used up, there would not have been a return of the color. I have myself observed such a discoloration in which it is no exaggeration to say that the tooth was a bright green; not a greenish tinge by any means, but a brilliant grass green.

Dr. A. M. HOLMES: I have had some experience in filling roots with paraffine. I formerly used wood points covered with Canada balsam. So far as I know, the use of paraffine was original with Dr. Beebe, of Rochester. I like it the best of anything I have ever used.

The special committee, to whom was referred the president's address, and the historical paper, presented by Dr. Holmes, reported as follows:

Your committee has considered the various suggestions contained in the president's address, and beg to offer the following:

Resolved, That the Dental Society of the State of New York believes that the solution of the problem which has caused misunderstandings between the Schools and the State Examining Boards, may be found in the plan recommended by the President, and already adopted by the Dental Department of the University of Buffalo, which consists in subjecting the candidates for graduation to an examination by the State Boards, and making their approval a prerequisite to graduation. When this is done, all question concerning the qualification of such students is removed, and such diplomas should be accepted everywhere.

Resolved, That this Society is in most hearty accord with the World's Columbian Dental Congress, and that it recommends to each of its members that they spare no pains in doing everything within their power to promote its interests.

Concerning the historical address of Dr. A. M. Holmes:

This contains a great amount of information which should be known by all men, coming as it does from one who so actively assisted in bringing about the events related. The wide experience of ex-Senator Holmes, his great political and personal influence, and his entire devotion and tireless labors in procuring the dental enactments, are known to every member of this Society. Your committee therefore recommends that in view of its public character, it be given for publication to any reputable dental journal that may make application for it.

Upon motion the report was accepted and the resolutions adopted.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, EDITOR.

BUFFALO, N. Y., JULY, 1893.

THE COMING CONGRESS.

Whatever difference of opinion there may be as to measures to be employed, we trust there is none among loyal American dentists as to the necessity for putting forth every exertion to make of the World's Columbian Dental Congress a scientific and social success. It is enough that such a meeting will be held, and we have no sympathy with those who sulk in their tents because they cannot have their own way. The credit of the dentists of America is at stake. He who will not at such a time put forth his utmost efforts to sustain and assist those who bear the responsibility, is unworthy to have a part in American dentistry. That the meeting will be a great one is already assured. We have some knowledge of what a part, at least, of the papers to be presented are, and can assure all that they will be worthy the occasion in quality, and abundantly sufficient in number. It only remains to make the discussions of equal value, and the congress must take its place as the greatest dental meeting ever held.

A great deal of attention will be paid to the social character of the occasion. Most dentists know something of the overflowing hospitality of Chicago. If they have never had any personal acquaintance with the great hearts that would enfold a world in their loving sympathies, they at least are not ignorant of what fame has widely proclaimed. All who visit that great city in August will be made to feel at home. There will probably be less of form and ceremony than might be observed in other countries, but that will be amply atoned for—if atonement is needed—by a warmth of feeling, a geniality of manner, and a cordiality of welcome, that will indicate something far better than mere conventionality.

One token of the spirit that animates Chicago dentists at this time is found in the fact that a furnished mansion has been leased as a kind of dentists' club, and this will be opened to all the visitors of Chicago dentists. Will be, said we? It is already open, and has been for some time. All the world is flocking to Chicago this summer. Let every

worthy dentist join the procession, and in August answer "present" when the roll of professional honor is called. Let him go prepared to pay the small sum demanded for a membership ticket, that he may help worthily to maintain professional honor. He may even do better than this, by forwarding the sum in advance, that there may be no lack of that which is essential to the success of all great undertakings.

A BASELESS ASPERSION.

The Dental Record, of London, gives all the prominence of a leading editorial to the following ungrammatical calumny:

"We are frequently having paragraphs sent us (*sic*), clipped from small local papers, with some such legend as the following: 'Mr. So-and-so has just returned from a visit to the United States of America, where he has received an honorary degree of D. D. S., conferred upon him in recognition of his labours in the dental profession for fifteen or twenty years' (as the case may be). It is indeed pitiable if the recipient of such honors (?) are (*sic*) honest in the acceptance of these degrees, and it also shows a most lamentable ignorance of the meaning of degrees in general, and American degrees in particular."

It is time for some one to be called to account for these misstatements. Whether the fault is in the "small local papers," in the returning Englishmen, or in the dental journals, we know not, but we challenge the *Dental Record* to publish one single instance in which a degree has been so conferred since the organization of the Association of College Faculties. If any one pretends to the possession of such a diploma, both he and the degree are frauds.

There are English societies, like the Royal Microscopical Society, which practically sell their honors to almost any one who may apply for them, and authorize the use of cabalistic letters, like F. R. M. S., by those who have scarce any other qualification than the possession of ten dollars, but such things are at present confined to England. In the early days of American colleges, degrees were too easily obtained by foreigners who did not hesitate to perjure themselves in their eagerness to secure American honors, but there was a time, even more recent than this, when the L. D. S. of Great Britain could be obtained with much less difficulty. That time has passed, we believe, in both countries; certainly it has in America, and English journals would do well to copy the courtesy of those in this country, and cease this pot and kettle business. That they will be able entirely to divest themselves of an unreasoning prejudice is scarcely to be hoped, but at least they can observe the common rules of international professional courtesy, and carry civil editorial tongues.

TIN FOIL FILLINGS.

What dentist of the present day employs tin foil regularly in his practice? Echo alone answers. And yet it is one of the best materials at our command. It possesses inherent qualities which make it the ideal filling for a certain class of cavities. Some of the older dentists can remember the time when it was extensively employed, by men whose operations stood the crucial test of many years hard service. Why then has it fallen into disuse? Is it because its proper insertion requires skill of too high order? Is it because the dentists of the present day have grown indolent, and seek their own ease more than they do the highest good of their patients? Either of these reasons would not be very creditable to us as a body, and yet, no other that seems sufficient readily presents itself to the mind.

The use of tin foil is not usually taught in our schools, or at least it is not given the importance which of right belongs to it. It is so easy to putty up a cavity with a plastic filling, that amalgam has been made to take its place, and yet, when properly inserted in a cavity to which it is adapted, it is infinitely superior. All plastic fillings which depend for their hardness upon crystallization subsequent to their insertion, are liable to the changes in form which that process necessarily entails. Expansion or contraction unavoidably follow. When water crystallizes into ice, there is a decided expansion. The general rule for metals is that they contract. Aside from this, there is usually a change of form during crystallization, so that a crystallizing body will not be of the exact shape of the matrix in which it is placed.

If an amalgam be inserted in a cylindrical hole in a piece of ivory, and its surface carefully leveled, it will usually be found that when it has become entirely set the edges will have drawn away from the matrix, and the surface will be raised in the centre, so that it will bear considerable filing before it is again level with the matrix, and then a minute channel will be found all about its periphery. This change is something inherent to the process of crystallization.

From this defect tin foil is free. When once well inserted it stays in precisely the same condition. It is soft and ductile, and can be easily and perfectly adapted to the walls of a cavity. At the same time, when thoroughly condensed it has nearly the wearing qualities of gold. A bar of pure tin has almost the impenetrability of the nobler metal. It can be worked very quickly, and a minute quantity of moisture is not as fatal as to a gold filling. It is peculiarly congenial to tooth tissue, and seems at times to exercise a decided therapeutic influence upon it. There would seem, then, to be no reason why dentists who are seeking for the best results should not employ it largely, unless it be that they are ignorant of its merits, or of the best methods of working it.

The average gold worker, when he attempts to use tin foil, seeks to employ the same kind of manipulation with it that he does with gold foil. But the characters of the two metals are widely at variance. Gold can be made to cohere. One particle can be added to another, and actually welded to it. This is not the case with tin. It does not weld, and the most that can be done in consolidating it is to so intermingle the surfaces of two pieces that they seem practically to be one. A pellet of thin gold foil can be laid upon a bar of the same metal, and by the impact of a smooth instrument united to it. Not so with tin. Under like circumstances it would be found necessary to use a sharp-pointed instrument, and by a succession of indentations to drive the particles of the one piece into the other. Hence the impact of a mallet is out of place in consolidating tin. It is impossible to add pellet to pellet, and by hammering with a mallet to build up a filling, as with gold.

The best way to insert tin is to use it in the form of cylinders, following the instructions laid down by the early operators for using soft gold. In the early days, dentists were unacquainted with the welding properties of gold foil, and depended upon wedging it in. That is precisely the manipulation proper for tin foil, which has the qualities that gold was formerly thought to possess. Cylinders of different sizes should be prepared, by rolling strips of folded tin foil about a smooth wire. These are then placed on end in the cavity to be filled, and pressed laterally, toward the periphery, the end being allowed to project. Another cylinder is added and pressed toward the margins, and this process is continued until the walls are completely lined by the cylinders. More are added in the centre until the cavity is filled. Then with a sharp pointed excavator, or a plugger of analogous shape, the surface is examined to see if there be any imperfections. If there are, the instrument is worked down into the filling, lateral pressure being almost exclusively used. When the hole is sufficient another small cylinder is inserted, and this is continued until the instrument can no longer be worked into the filling.

Then commences the consolidation of it by means of serrated condensers. For the first time pressure nearly in the direction of the axis of the tooth is employed. Heretofore all pressure has been lateral. By hand-pressure the surface is gradually condensed down, the projecting cylinders forming the surplus material, until a dense filling is the result. It must be understood that nothing save the ends of cylinders are presented. In no case should the tin be arranged in layers, for they are likely to flake off. If there is a deficiency of material at any point, more tin should be added, by working a hole into which another cylinder may be inserted with a projecting end, which subsequently can be condensed down. The mallet should not be used, because under its blows the tin is literally chopped out. If a filling inserted in this manner be ground

down upon its surface with a corundum stone, its density and impenetrability will surprise many experienced dentists.

Of course the class of cavities to which tin is best adapted are those with four walls, but a compound cavity, involving the crown and approximate surface, may be readily filled with tin, by so arranging the cylinders that their ends shall be presented wherever the filling is exposed. But two kinds of pluggers are needed, wedged-shaped ones for inserting and pressing to place the cylinders, and round or square condensers for consolidating the surface.

THE ADMINISTRATION OF ANÆSTHETICS.

A recent unfortunate case, occurring in Buffalo, in which a patient died in the dentist's office during the administration of nitrous oxide gas for the extraction of teeth, gave the coroner's jury an opportunity to call for the passage of a law forbidding the giving of anæsthetics unless a qualified physician be present. The dentist at whose hands this distressing incident occurred is not a dental graduate, as he was one of those who were in practice at the time of the passage of the law, twenty-five years ago. No special means for resuscitation were at hand, nor any general remedies to be employed in unfavorable cases. All this was brought out at the inquest, and prompted the recommendation.

At the present time, the dentist who graduates at any good school is without doubt quite as competent to give anæsthetics as is the average medical graduate. He will have listened to lectures upon the character of anæsthetic agents, he will have seen them given many times, and he will have been taught what to do in cases of emergency. He will have been instructed in auscultation and percussion, and will be able to read a pulse and know the heart and lung sounds.

But this the average coroner's juror, and even the ordinary member of the Legislature, will not know. He imagines that all physiological and pathological knowledge is confined to medical men. Unless some steps are taken to show the legislators the true state of the case, some fine morning the dentists of this and other states will awaken and find that it is a misdemeanor for them to give an anæsthetic. This would not alone be a blow aimed at the pocket, but it would lower us in the estimation of the public, and diminish our own self respect.

To forestall any such possible action, the dentists themselves should take charge of the movement, and have introduced and should advocate a law forbidding any one except regularly graduated physicians and dentists from giving anæsthetics. The passage of such a law would do much to inform the public, and to convince them that educated dentists understand as well as medical men the giving of anæsthetic agents.

A DIFFERENCE OF OPINION.

The Dental Tribune, of Chicago, calls the editor of this journal to account, because he does not approve of all the means that have been employed in mistaken endeavors to advance the Columbian Dental Congress. Time will show which is right. Certainly, no one is more anxious for a meeting that shall redound to the credit of the dental profession than is the editor of *THE PRACTITIONER*, and it was because of this that he criticized some of the words and deeds of those who appear anxious to place themselves outside all professional lines, by a cry to "Let down the bars." We are too loyal to the Congress now to follow our Chicago contemporary into a discussion of personalities just upon the eve of it, at a time when it is most important that there should be harmony. Hence we drop the consideration of some of the questions involved until after that meeting shall have closed.

BIBLIOGRAPHICAL.

An unusual number of new books are upon our table, and should receive notice this month. But the press of other matter forces us to postpone their review until the next number, when they shall receive all the attention which their importance merits. Among them are the following:

MATERIA MEDICA AND THERAPEUTICS. By John V. Shoemaker, A. M., M. D. Second Edition. The F. A. Davis Company, publishers, Philadelphia. Two volumes.

PSYCHOPATHIA SEXUALIS. By Dr. R. von Krafft-Ebing. Translated by Charles Gilbert Chaddock, M. D. Same publishers.

A NEW MEDICAL DICTIONARY. By George M. Gould, B. A., M. D. P. Blakiston, Son & Co., Publishers, Philadelphia.

THE LAW OF PUBLIC HEALTH AND SAFETY. By Le Roy Parker, Vice Dean of the Buffalo Law School, and Robert H. Worthington, of the New York Bar. Mathew Bender, publisher, Albany, N. Y.

ORTHODONTIA. By S. H. Guilford, A. M., D. D. S., Ph. D. Second Edition. Philadelphia.

NOTES ON ANÆSTHETICS. By Arthur S. Underwood, M. R. C. S., L. D. S., and C. Carter Braine, F. R. C. S. Second Edition. Claudius Ash & Sons, publishers, London.

CURRENT NEWS AND EXCERPTS.



A CHAPTER IN DENTAL HISTORY.

It is now possible to obtain valuable information concerning the early days of dentistry, which a few years hence will be lost to the world, through the death of those who alone possess personal knowledge of the men and events of our pioneer history. It is, therefore, with a great deal of pleasure, that *THE PRACTITIONER* gives in this number a portrait of one who exercised a marked influence in his day, and who gave to the world an implement new in dentistry, that has changed the whole course of our practice. The dental mallet was not an original invention, any more than was the rubber dam; but the introduction of each into practice revolutionized old methods, and marked a distinct era in our professional history.

Dr. Ebenezer Merritt was born in Redding, Fairfield County, Conn., January 13, 1795. He received a common school education, and when about twenty years of age set out to seek his own fortune. He stopped at Salem, Mass., where he commenced the study of medicine with a Dr. Allen. He graduated at the Castleton Medical College, in Vermont, about the year 1820. Not liking the practice of medicine, he went to Philadelphia and studied dentistry with a French dentist, whose name is unknown, and entered upon practice. After itinerating for a time he located in Pittsburgh, about the year 1825, and in 1828 commenced the manufacture of mineral (porcelain) teeth.

In 1829, Dr. Granville Merritt, (brother of Dr. Charles Merritt, of New York City) who was born in Redding, Conn., July 19, 1809, went to Pittsburgh, and commenced the study of dentistry with his uncle, Dr. E. Merritt, at the same time acting as assistant in the manufacture of porcelain teeth.

The uncle and nephew succeeded in making some very creditable teeth, but upon the death of Granville Merritt, in March, 1835, at the early age of 26, Dr. E. Merritt abandoned the business.

Dr. Charles Merritt went to Pittsburgh in 1830, and found his uncle using the mallet in filling teeth with a soft gold foil made by Bull, of Philadelphia, employing it only in condensing the surface. Cohesive gold was at that time considered worthless for filling purposes. Dr. E. Merritt had for twenty-seven years a large and lucrative practice in Pittsburgh. In 1852, he removed to Cleveland, and engaged in coal business. He died in the latter city, September 5, 1864, aged 69 years.

The mallet of which a cut is given at the head of this article, was not the first one made and used. Dr. Joseph C. Merritt, (son of Dr. E. Merritt) who practiced dentistry for several years in Cleveland, but who is now living in Florida, has the original one in his possession. It was given him by his mother, after the death of his father. She had always preserved it religiously, as it was used in filling her teeth in 1828, previous to her marriage. Dr. Joseph C. Merritt further says that in 1867, while he was a student in the New York College of Dentistry, he carried the original mallet to the office of Dr. W. H. Atkinson, who was delighted to see it, and who assured him that without doubt his

father was the first one to use the mallet in dentistry. He showed to young Merritt a pamphlet, in which was printed a poem dedicated to "My Mallet," written by Dr. Atkinson some years previously, and in which there was a reference to Dr. Merritt, of Pittsburgh, as the first to use a mallet in filling teeth.

Dr. Atkinson became acquainted with the use of this implement when living in Cleveland, previous to his removal to New York. It was not generally known in dentistry, and with his accustomed enthusiasm, recognizing the merits of that method of operating he at once commenced to advocate it, and to demonstrate to others its possibilities.

The mallet now in our possession, and of which a fac-simile in size and appearance is here given, was made, as the date on the handle indicates, by Dr. Granville Merritt, in 1833, and is a copy of the original one, made by Dr. E. Merritt, of Pittsburgh. The head is of silver, filled with lead. The handle is of time-stained ivory, and it has been broken once or twice, and so shortened by an inch or more. The whole is of exquisite workmanship, and it shows the marks of much hard usage. It is accompanied by two other instruments, made by the same skillful hand, and of equally beautiful workmanship, one being an ivory-handled chisel, and the other a socket handle for broaches and probes. Together they form relics of the early days that must be carefully preserved for the admiration of future generations of dentists.

We are indebted to Dr. Charles Merritt, one of the oldest and most-respected of New York practitioners, for the specimens and data given.

NITRATE OF SILVER.

At the meeting of the American Dental Association for 1892, when the use of this article was under discussion, Prof. Taft said that forty years ago his attention had been called to it by Prof. James Taylor, of Cincinnati, and that he had been more or less familiar with it ever since. It was one of those excellent remedies which are allowed to fall into comparative forgetfulness, and after a term rediscovered. This assertion was rather hotly resented by Prof. Truman, who declared that he had been familiar with the literature of dentistry for more than forty years, and had no recollection of a single paper on Nitrate of Silver for the prevention of decay in teeth.

Dr. Kasson C. Gibson, of New York, has called our attention to an article written by the late Dr. B. T. Whitney, of Buffalo, published in *The Dental Register of the West*, then edited by Prof. James Taylor, in the number for April, 1854. In this article, Dr. Whitney, after giving a description of the agent and relating the results of a series of experiments in its use, conducted by him, goes on to say:

"As an application to decayed or denuded teeth that have become sensitive, I hold it in high estimation. It acts decidedly, and in a two-fold way, in destroying the animal fibres that, in their ramification through the body of the tooth, become exposed and inflamed, and then, by closing the mouths of the cells with silver, which in parting with its corrosive power, unites with the oxygen and forms an inert metallic oxide. This gives a coating of insoluble metallic body over the denuded portion of the tooth, which, though exceedingly thin, is yet sufficient to protect the nervous filaments and dentine from irritation and contact with the outer world. The tooth body, being porous, absorbs more or less of the nitrate, which soon oxydizes and gives the tooth a blackened appearance. These canals, though sufficient to transmit nutriment from the nerve pulp, through the dentine, are too minute to allow the introduction of the particles of nitrate of silver to a very great depth, so that the discoloration is superficial.

"That the oxide of silver closes the cells and forms a metallic surface, is perfectly demonstrable by immersing a tooth with the dentine exposed in a solution of the nitrate, and then placing it under a blow-pipe, with a heat sufficient to fuse the silver, when a bright silver surface will appear to the naked eye, susceptible of bearing a polish with a burnisher almost equal to that deposited by the electro-galvanic battery upon a

metal surface. * * * * * In the softening of a tooth under a clasp, I have obtained decided benefit from its free use, in preventing the destruction of the lime, and forming over the surface a hard and impervious coating, the semi-disorganized portion of the tooth absorbing a greater quantity of the silver, which in oxydizing becomes very hard. * * * * *

"Oft repeated applications will usually prevent pain, and in most cases, if not arrest, greatly retard the injury to teeth from clasps or denudation."

Dr. Whitney commences the article by saying that there has long been a popular prejudice in the profession against the use of Nitrate of Silver as a topical application to the teeth and month, thus proving that even then it was by no means a novelty in dental practice. In the next number of the same journal, that for July, 1854, Dr. George Watt, who had then but just graduated from the Ohio College of Dental Surgery, comments upon it, and attacks the chemistry of Dr. Whitney, himself making quite as apparent lapses. But he does not speak of it as a new remedy in dental practice. (In the same number, by-the-way, Chapin A. Harris speaks of the use of cobalt for destroying the sensibility of dentine, but says that it is the arsenic combined with it which devitalizes.)

In the *American Journal of Dental Science* for July, 1854, Dr. Whitney's article is copied in part, with seeming approval. (In the same number of this journal, Dr. C. A. Du Bouchet says concerning a matter that is not even now settled: "Capping nerves has never, so far as I can ascertain, proved an eminently successful operation.")

We submit that these extracts prove that forty years ago the use of Nitrate of Silver for obtunding purposes, and for the prevention of decay, was not by any means a new process, and that its modern use is but a revival of that which had fallen into disuse.

DENTAL GRADUATES.

The number of students receiving diplomas at the spring commencements of the various dental colleges, so far as reported, was as follows:

Chicago College of Dental Surgery	26
Baltimore College of Dental Surgery	20
Philadelphia Dental College	25
Pennsylvania Dental College	23
Ohio College of Dental Surgery	15
American College of Dental Surgery (Chicago)	28
Missouri Dental College	3
Western Dental College (Kansas City)	6
Kansas City Dental College	4
University of Pennsylvania	16
Columbian University	4
University of Buffalo	5
University of Iowa	6
Northwestern University (Chicago)	6

THE OLDEST PRACTICING DENTISTS.—*The Dental Review* says that Dr. T. H. Burras, who died in New York City, March 12, was the oldest dentist in the State of New York. Dr. L. D. Walter, of Rochester, who is 80 years of age, puts in a full day's work at the chair, six days in the week. "Uncle Jerry" Robinson, of Jackson, Mich., is now 81, and works every day in his operating room. He has earned his living by the practice of dentistry since 1836, having been in practice nearly 57 years, and declares that he is making improvements every day.

OBITUARY.

DIED, in Malaga, Spain, May 15, 1893, Joseph W. Vegas, D. D. S., in his sixty-fourth year. Dr. Vegas was a Spaniard by birth, his native place being Malaga. He came to New Orleans, La., when but a boy of fifteen. He became a member of the family of his brother, John Vegas, who gave him opportunities for obtaining an education in the public schools of the city. Arriving at manhood, he became a teacher of dancing, in connection with his brother, but the avocation proving too precarious, he abandoned it and commenced the study of dentistry, graduating from the Pennsylvania Dental College in 1862.

He located at Bahia, Brazil, and almost at once entered upon a lucrative practice, which he continued for fifteen years. In 1863 he was elected a member of the Odontographic Society of Pennsylvania, and not long after was elected an honorary member of the Eighth District Dental Society of the State of New York.

In 1863 Dr. Vegas took a very prominent part in organizing a Dental Department in the University of Bahia. He was always devoted to the cause of dental education, and no one did more for its advancement in South America than did Dr. Vegas.

In 1878 he retired from practice upon a competency, returning to his native city and country, where he lived until the time of his death. He was honored by the Republic of Brazil with an appointment as Consul to Malaga, which position he held for nine years.

THE CURRENT NUMBER.

A considerable amount of valuable matter is necessarily put over until the next number. With this is the last part of the report of the anniversary meeting of The Dental Society of the State of New York, and that of the anniversary dinner given at the Delavan House. A report of the Twenty-fifth Annual Meeting of the Eighth District Dental Society, and of the banquet at the Tift House, are also crowded out.

The leading article in this number—made the leading one by force of circumstances—is published originally in *The Dental Cosmos*. That there is less than the usual amount of "Editorial" and "Current News" is due to the pressure of other and more valuable matter.

OUR DENTAL COLLEGES.—The Chicago College of Dental Surgery has laid the corner stone of a new college building to be completed this fall, and which is to cost \$125,000. It will be finished in marble and hard woods. It occupies the best position in a great educational center, immediately across the street from Rush Medical College.

The Missouri Dental College already has its own building, and the Kansas City College has just purchased one. The New York College owns its own home, and other colleges can boast of the same. It is encouraging to note these evidences of prosperity.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

At the annual election for officers of the Dental Society of the State of New York, the following were chosen to serve for the ensuing year:

<i>President</i>	F. T. VAN WOERT, of Brooklyn.
<i>Vice-President</i>	H. J. BURKHART, of Batavia.
<i>Treasurer</i>	J. J. HART, of New York.
<i>Secretary</i>	C. S. BUTLER, of Buffalo.
<i>Correspondent</i>	R. OTTOLENGUI, of New York.
<i>Censors</i> { <i>First District</i>	WILLIAM CARR, of New York.
{ <i>Third District</i>	E. C. BAXTER, of Albany.

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SURGICAL TREATMENT OF PALATAL DEFECTS.

BY TRUMAN W. BROPHY, M. D., D. D. S., CHICAGO.

An abstract from a paper read in the Section of Dental and Oral Surgery of the World's Columbian Dental Congress, held in Chicago, August, 1893.

Congenital fissures of the palate are of such frequent occurrence, and their influence upon the patient so conspicuous and depressing, that measures looking toward their successful treatment have always been looked upon by surgeons with deep interest.

Palatal defects may be congenital or acquired. True cleft of the palate, including the velum, hard palate and alveolar process, with hare-lip, either single or double, is almost invariably congenital, and is more frequently met with than is the acquired form. Harelip and cleft palate are the results of arrest of development in the early weeks of embryonal life, dependent upon heredity and other causes.

The want of a meat diet on the part of the mother, and food having abundance of calcium phosphates, the elements of food essential to furnish the material with which to build up the osseous tissues, is, no doubt, in many cases, the explanation of congenital cleft palate; and yet we find in certain instances abundance of tissue to form a perfect palate, but the palate is ununited; other factors, therefore, operate in causing the deformity.

Hereditary tendency is, in the history of several of my own cases, convincing evidence that, as in other abnormalities, the child's defect is

transmitted from progenitors. Influences which produce rickets in children operate to cause cleft of the palate. Reference has been made by Mr. Lawson Tait, F. R. C. S. to certain localities in which cleft palate is endemic. In my experience I have had seven cases in six years from one little village, and while this by no means proves Mr. Tait's statement, which he firmly believes, it tends that way.

Sir William Ferguson states, in his work on surgery, that intermarrying is an element always to be considered in fixing the cause of cleft palate.

Maternal prenatal impressions are firmly believed in by many mothers, but the difficulty in establishing proof in such cases places this alleged cause as a doubtful one. Cleft palate has frequently occurred in families not known to inherit the malformation, and it may be the result in some cases of a low state of health of the mother in the early weeks of pregnancy, or that the pregnancy has followed very closely upon a previous one, or has occurred during lactation.

VARIATION AND INFLUENCE OF MALFORMATIONS.

In the event of the intermaxillary bones failing to unite with the lateral or maxillary bones proper, we find, should this failure occur on both sides, double harelip; if on one side, single harelip. It is asserted that in the majority of cases in which the fissure is single, it is to be found on the left side. In the double fissure the vomer usually has its support below, in the intermaxillary bones only. These intermaxillary bones appear as appendages to the vomer, and are held in position by fibrous, mucous and cartilaginous tissue. The deformity in such cases, when accompanied by a double split or fissure of the alveolar circle, is most striking. The incisor teeth, both temporary and permanent, are contained within the intermaxillary bones, and usually in complete double cleft the central incisors only are well formed, while the laterals are defective, malposed, or sometimes absent. Cleft of the hard palate and fissure of the lip in the median line is of rare occurrence. Sir William Ferguson states he never saw a case, but two have been recorded.

Congenital cleft of the palate, in its simplest form, is a division only of the uvula. It may extend through the soft palate or velum; it may extend forward, separating the palatal bones; it may pass anteriorly, separating the palatal plates of the maxillary bones and into the alveolar ridge, or it may divide the ridge and have as a complication harelip, single or double, with or without a complete separation of the intermaxillary bones from their lateral attachments. In the latter case, the attachment of the intermaxillary bones is to the nasal cartilage and vomer only. The vomer may be attached to one side of the hard palate, or it may not be fastened to either side. As in other surgical cases, the parts present various types of anatomical malformations.

To consider the requirements of harelip and cleft palate patients, we take up :

I. THE TIME OF LIFE WHEN SURGICAL OPERATIONS PROMISE THE BEST RESULTS.

These operations should be performed in early infancy, the opinion of distinguished authors to the contrary notwithstanding. It is well known that many infants born with this defect die within a short time after birth, when the cleft is of a marked character. Mr. Lawson Tait says that one-half of the children born with extensive clefts die from starvation within a few days after birth, and thinks we might possibly save many of them if we could help them to suck by early giving them a roof to the mouth, and therefore advocates doing the operation for closing the hard palate as early as the third week. In the complication of harelip with cleft palate, the practice has almost invariably been to operate upon the lip, and allow the fissure of the palate to remain unclosed. This, in my judgment, is a mistake. The palate should be first operated upon, for various reasons :

1. The fissure of the lip enables the operator to gain a little more room in which to work.

2. The closure of the palate is an operation attended with greater difficulties in its performance ; besides, the closure of the cleft through the alveolar process, if it exists, may be more surely accomplished when fully exposed to view through the divided lip, than when covered, as it would be subsequent to the closure of the lip.

It is unnecessary to say that the bones are soft, and will easily yield in early infancy. The tissues unite kindly, and the shock following the operation is not so great if performed within the first month, as it would be later in childhood. It is a well known fact that the nervous system of a child is not so well developed in early infancy as it is later, hence one of the advantages of performing this operation before the nervous system has developed to a point which would subject the child to a more severe shock. The operation, therefore, should be performed as soon as the functions of the organs of the body are well established. This may be within the first week, or any time within the first month.

3. The child will be better nourished.

4. If performed, it will bring into action the muscles of the palate and develop them, whereas, if they are not thus put into use they will atrophy, and later it will be found, as is often the case, that there is insufficient tissue to restore the palate to its natural form. It is scarcely necessary to say that muscular tissue which is not subject to action and use soon becomes atrophied.

5. One of the most important reasons is, that the parts operated upon early not only develop well, but the child, when arriving at the age when articulation in the form of speech is attempted, finds that he can speak as other children do, and does not acquire the habit of articulating through the nasal passage, which is characteristic of this deformity, for the nasal accent when once acquired cannot be easily corrected. Fissures, or clefts of the palate, not closed in early infancy, are almost invariably accompanied with pharyngitis.

6. Before the calcification of the bone is far advanced, and also before eruption of the teeth, the operation on the hard palate can be more easily and successfully accomplished; if made subsequent to the eruption of the teeth it is always attended with more difficulty, and the results are less satisfactory.

II. THE CONDITION OF THE PATIENT.

The patient should be free from any of the diseases of childhood, and from specific inheritance. The bowels should be natural, the circulation normal, and the appetite usually good. It would not, of course, be wise to operate on a child who was the victim of a specific taint, or otherwise suffering from affections of the skin or blood. The patient should be deprived of solid food at least four or five hours prior to the operation, and but small quantities of liquid food should be given. The parents or guardians should be informed as to the extent of the operation, the possibilities of failure, and the advantages of success.

III. MODES OF OPERATING.

The modes of operating are numerous. From the date of the first operation upon cleft of the palate, which was performed in 1764, by La Monier, of Paris, down to the present time, changes and improvements have been made. The method of procedure in the closing of the velum varies but little, but the skill of the operator has been taxed in securing proximity of the edges of the cleft of the hard palate. It was Warren who first proposed the elevation of the periosteum, and the approximation of the mucous membrane of the two sides to bridge over the osseous fissure; and it was Ferguson who proposed approximating the bones by lifting them and bringing them into apposition. In looking over the history of staphylorrhaphy, the reader will be struck with the likeness of complaints, the three principal of which seem to be the difficulty in tying the sutures, the great tendency of the sutures to slough out after they are once nicely secured, and the concealment of the parts during operation, both because of deficiency of light and the accumulation of the muco-saliva, which in mouths thus affected is secreted in great abundance.

In my judgment, it is sometimes best to divide the operation into two stages, making first the operation on the hard palate, and subsequently, after the process of repair is complete, an operation on the soft palate. If, however, the operation is to be made on both the hard and soft palates at the same time—and this is sometimes admissible—the edges throughout the entire length of the fissure should be first prepared. The operations that have been performed by Ferguson, Warren and others on the hard palate, have their advantages, and are oftentimes commendable in cases of adults, but in early infancy the new operation for the radical closure of the hard palate, as devised by me, will now be dealt with. The operation for the closure of cleft palate is one more or less dreaded by the general surgeon, both on account of tediousness, and the not always satisfactory results. My operation is as follows:

First, place the patient on the table with the face toward the light. Introduce the oral speculum and vivify the edges of the fissure; do it thoroughly, and with a bold hand. A mere scraping of the mucous membrane will never suffice to bring about union which will be permanent and satisfactory. On the hard palate trim the opposing surfaces of the bone as well. If this is well done it will secure a sufficient exudate to make the operation a successful one, in this respect at least. The knife will easily cut through the soft bone of the hard palate, and the alveolar process of young patients. Then raise the cheek, and well back towards the posterior extremity of the hard palate, just back of the malar process, and high enough to escape all danger of not being above the palatal plate of the bone, insert a large braided silk suture, carrying it through the substance of the bone, so that it will come out at a corresponding position upon the opposite side. The silk suture is more easily introduced by the needle, but a wire suture of silver should be substituted for it, and drawn through in its place, and this wire may be doubled in case the condition of the parts and the tension upon the tissues necessary to approximate them seem to require it. Nearer the front portion of the palate insert another wire, carrying it through the substance of the bone above the palatal plates, and out through the other side in a position corresponding to the place of entrance. Thus we shall have one wire passing over the palate in front of the malar process of the bone, and another behind it.

The next step is to take a lead button, moulded to fit the convexity of the part, and long enough to pass beyond the exit of the wire sutures, so that they will pass through it. Have it provided with eyeholes, through which are passed the protruded ends of the wires upon each side; twist them together—that is the right side end of the anterior wire, and the same on the left. It is better practice always to twist wires in one way, either from right to left, or from left to right. These are heavy tensioned

sutures, and once approximated, the parts cannot be separated by the patient.

If we are unable to close the fissure with these wires, if from lack of tissue or from firm resistance of the parts it cannot be done, there is a further method to be employed which will obviate these difficulties. With your knife, after the cheek is well raised, divide the mucous membrane just over the malar process. Here insert a knife in a horizontal direction, and when well inserted, sweep the handle around from one side to the other, as from behind forward. In this way a maximum amount of bone is divided, and a minimum amount of the mucous membrane. This done on each side, the bone can very readily be moved toward the middle line. Having thus divided the bones upon either side, the wire sutures passing through the lead buttons may again be twisted, and the cleft of the hard palate will be easily closed by approximation of the two sides. The incision in the mucous membrane in making the separation of the bones is as small as possible, for the reason that this membrane must serve to retain the bones in proximity, or to hold them nearly together. If, after the parts are approximated, they are kept antiseptically clean, the bones will kindly unite, and the palate will be restored, so that its full function will be performed. Separation of the bones is attended with little hemorrhage, and the parts do not usually cause more inconvenience to the patient than the ordinary operation of lifting the hard palate according to the practice of Ferguson.

The germs of the teeth are sometimes disturbed, as I have found later, when they are erupted, that certain teeth were imperfectly formed. This applies only to the molars of the temporary set, but it is not unlikely that the germs of the permanent teeth may also be disturbed, and the teeth made imperfect by this procedure. The palate, too, may be contracted to an abnormal extent; and yet it is a well known fact that the alveolar process develops with the eruption of the teeth, and my experience has convinced me that in mouths thus treated, the teeth of the upper antagonize in a normal way with those of the lower jaw. If, however, the upper superior arch should be abnormally contracted, and when the teeth erupt fail properly to antagonize with their fellows of the lower jaw, the means well known to the modern dentist may be employed by which the arch can be expanded, and the slight abnormality removed.

After the approximation of the edges in the manner I have described, the parts should be thoroughly dried, the edges of the wound carefully examined, and if need be some fine sutures inserted here and there to insure perfect co-aptation of the parts. The after-treatment is very simple, consisting solely in antiseptic cleanliness, nourishing of the patient upon liquid food, the prevention of disturbance of the parts by the child, or of the introduction into the mouth of anything that might interfere with

the sutures. Abrasions of the mucous membrane caused by the buttons need not disturb the operator, for they are usually slight. So much for the operation for the radical closure of the hard palate.

The soft palate may be closed in the usual way, and it may be best accomplished by the use of a needle invented by Dr. Prince, of Jackson-ville, Illinois, with Dr. Black's "pick-up," which simplifies the operation and renders its performance easy. I regard silver sutures as the best.

I particularly desire to enter a protest against the division of the tensor palati muscle, so frequently severed by surgeons with a view to relieving the tension upon the palate, and thus rendering its union more certain. This muscle once divided will never unite, as retraction of its fibres will instantly occur after its division, and we have consequently one of the most important factors in the anatomical structure of the palate destroyed. The tension upon the fleshy approximated surface or edges of the wound of the palate may be relieved in another, and what I consider a far better, way,—better because the functions of an important portion of the palate is by this means not destroyed. It consists in passing a wire through the borders of the tensor palati muscle, as it passes around the hamular process of the palatal bone, and fixing the loop with a large bead resting upon the visible surface of the hard palate, directly over the tensor palati muscle. The wire passing through the bead and muscle is carried also to the opposite side, and thus pressure is brought to bear upon the fibres which will temporarily paralyze it, and thus remove the tension from the fleshy approximated surfaces of the palate. After the process of repair is complete and this tension suture removed, the muscle will soon resume activity. It must be remembered that a surgical operation to be a success must leave the patient with sufficient palatal tissue perfectly to close the posterior naris during articulation. An operation may be surgically a success, but if there is insufficient tissue to close the naris in the articulation of sound, it will not be a physiological success.

Where there is insufficient tissue in young persons and adults to secure the closure of the posterior naris by operating, the correction of articulation is best accomplished by means of artificial vela; but whatever method of treatment of congenital cleft palate may be adopted, improvement in the voice must to a very great extent be gained by education. The patient has in the first few years of life acquired imperfect habits of speaking, particularly in assuming the guttural and nasal tone, which requires great care to overcome. It is essential that he should be taught to speak with his lips, and to throw the voice forward. With proper teaching and diligent practice he will in time speak as distinctly as the majority of persons whose palates are normal.

Lastly, I desire to say that the subject of harelip is one which is so extensive as to preclude its introduction into this paper.

ASPHYXIA—ANÆSTHESIA.

BY DR. F. W. LOW, BUFFALO, N. Y.

Read at the Twenty-fifth Annual Meeting of the Eighth District Dental Society,
Buffalo, N. Y., April 18, 1893.

On a hot summer day in the year 1789, in front of a small barber shop on one of the streets of the little city of Baden, a dense and motley crowd had congregated, climbing one upon another and craning their necks almost to dislocation in order to get a better view of what was happening within, where a short and portly Swiss constable had followed a drunken and noisy German brewer, and now had him securely grappled by his Adam's apple, and pinioned against the centerpost of the establishment, while the frouzy barber with wide-staring eyes was crying aghast, "Um Gotteswillen, Um Gotteswillen." Already the ashen hue upon the German's face was gradually changing to one of deeper purple, when suddenly his stalwart frame collapsed and he fell inanimate upon the dirty floor. "Mein Gott," cried the frightened officer, "I fear that I have killed him."

"He's only swallowed his tongue," shouted some one from the street. Whereupon the aforesaid frouzy barber coming to the rescue in a very bungling manner with his very clumsy pinchers, in his frenzied efforts to get the asphyxiated victim's somewhat massive jaws apart, managed to pull out or gouge out two prominent front teeth. Meanwhile, unconscious of his loss, but thoroughly sobered and completely cowed, his hilarious niblets gradually awoke, and soon allowed himself to be carted off to jail, if not a happier yet a wiser man.

This, then, is the history in brief of the first case recorded of the extraction of a human tooth under asphyxia narcosis.

A PARALLEL.

On the 29th day of April, 1893, in the office of a dentist in the city of Buffalo, Mrs. L——, a woman about twenty-six years of age, in apparent good health, reputed the mother of two healthy children, presented herself for the extraction of four teeth. As she desired that the operation should be entirely painless, nitrous oxide was determined upon as the narcotic, and accordingly about four and one-half gallons were administered. The teeth were quickly and easily extracted, coming out whole and clean, without alveolar fracture.

No unusual appearance of the patient's countenance was noticed, either by operator or assistant. She recovered consciousness for a moment, leaned forward in the chair, expectorated some blood, suddenly collapsed, her head falling back upon the headrest, and she entirely ceased

respiration. She was removed from the chair to a couch, her feet being placed at its head, in order to bring arterial blood to the brain, as is usual in such cases. Artificial respiration was at once resorted to, and an attendant dispatched for two physicians.

They soon arrived, artificial respiration was continued, and a hypodermic injection of one-fiftieth grain of nitro-glycerine injected subcutaneously, to stimulate the heart.

Within fifty-five minutes from the time the gas was administered the heart ceased to beat; in the meantime, except for a few gasps forced by artificial respiration, the functions of the lungs were from the first never re-established.

Autopsy revealed a heart weighing about that of a normal organ, the valves being apparently perfect.

Physicians present expressed the belief that, so far as post-mortem evidence could determine, it would have been impossible to find ante-mortem evidence of disease about it. The lungs were slightly œdematous, but otherwise normal. The brain was not examined. The verdict of the coroner's jury a few days later was that Mrs. L—— came to her death from asphyxia narcosis, induced by the inhalation of nitrous oxide gas. That while no blame was to be imputed to the method of administration, or to the means employed for resuscitation, still in the minds of the jury, the legislature should be memorialized to pass such laws as would make it a misdemeanor for any dentist hereafter to administer nitrous oxide gas, without the attendant presence of some legally qualified practitioner of medicine.

And this in brief is the history of the last fatal case of asphyxia narcosis, induced for the extraction of teeth.

The means employed in these two remote cases cited were entirely dissimilar. Practically, the ends attained were exactly parallel, except that in the latter case asphyxia could not be overcome, and the unfortunate patient died.

As to whether nitrous oxide anæsthesia is asphyxia narcosis pure and simple, most eminent authorities are at decided variance. The eminent doctor, H. C. Wood, of Philadelphia, in the May number of the *Dental Cosmos*, says that "nitrous oxide acts as an anæsthetic merely by shutting off oxygen." His belief in this theory is founded upon the following facts:

"An animal will live as long in nitrogen, in hydrogen, or even in a vacuum, as it can in an atmosphere of pure nitrous oxide.

"The circulatory phenomena of nitrous oxide anæsthesia are very similar to those which are caused by the inhalation of pure nitrogen, or by mechanical asphyxia.

"The addition of sufficient oxygen to nitrous oxide prevents any an-

æsthesia, and finally, that coma is not developed until the oxygen in the blood has been reduced to three or four per cent."

The five experiments which he reports with nitrous oxide anæsthesia upon dogs seem to bear out conclusively this hypothesis.

On the other hand, Prof. Wilbur F. Litch, in the *American System of Dentistry*, 1887, (*Amer. System*, p. 167) stoutly maintains that "many have over hastily arrived at the conclusion that asphyxia pure and simple is the essential element, and indeed the sole factor in anæsthesia with this agent. Their conclusions," he avers, "are based upon insufficient data, which more careful investigation completely nullifies." He says that "nitrous oxide, like chloroform and ether, does possess specific anæsthetic power, the asphyxia being merely incidental, and entirely dependent upon the manner in which the gas is administered."

If Prof. Wood is right, how will he explain the experiments of Prof. Paul Bert, who by administering under increased atmospheric pressure a mixture of oxygen and nitrous oxide, succeeded in producing a profound and prolonged anæsthesia, while at the same time maintaining the normal proportion of oxygen in the blood, and at the same time avoiding all symptoms of asphyxia? *

Leaving this vexed question to scientists and time for its ultimate solution, let us return for a moment to the consideration of the recommendation of the Buffalo coroner's jury. However onerous we as a profession might find such enactments, public sentiment most strongly favors it, and it is not at all improbable that at no distant day their recommendations may be adopted.

What are we going to do about it? Before I attempt to answer this leading question, let us first determine whether death thus resulting occurs with sufficient frequency to deter us from the use of nitrous oxide,

* "Protoxide of nitrogen is widely employed at the present day to render painless the extraction of teeth, but this anæsthesia cannot be prolonged, for the simple reason that as soon as perfect insensibility is obtained, dangerous phenomena of asphyxia appear. This is because the only way to produce anæsthesia is to administer the nitrous oxide *pure*, unmixed with air; therefore, of course, asphyxia is induced *pari passu* with anæsthesia. The reason why nitrous oxide must be administered pure is simply this: in order that a sufficient quantity to anæsthetize should enter the economy, the tension of the gas should be equal to one atmosphere at a normal atmospheric pressure; this means a cent. per cent. proportion of gas. In other words, the lungs must be *full* of gas, and therefore there is no room for any oxygen. This is the case when the pressure of the atmosphere is normal.

But if the patient be placed in a pressure of two atmospheres, the required tension can be obtained by causing him to breathe 50 per cent. of nitrous oxide and 50 per cent. air. Under such conditions, it ought to be possible, not only to obtain anæsthesia, but to maintain a normal quantity of oxygen in the blood, and consequently to preserve the conditions necessary to respiration."

PAUL BERT.

even if we finally arrive at the conclusion that we can do nothing. At the coroner's inquest held upon the case above referred to, the statement was made by one of the medical expert witnesses, that death from chloroform narcosis occurred once in 3,000 times, while death from nitrous oxide occurred but once in 30,000 times, thus drawing the inference that nitrous oxide was only one-tenth as dangerous as chloroform. I know not from what authority this estimate was quoted, but I am positive that it is entirely erroneous.

In the *International Encyclopædia of Surgery*, edition of 1881, we find this statement: "Nitrous oxide, in spite of its asphyxiating property, is the safest of all anæsthetics for brief operations. This gas has been administered more than a million times, with but seven fatal cases." This would average only about one death to 143,000.

In the article before referred to, published by Prof. Litch, on the subject of nitrous oxide anæsthesia, he summarizes by saying that since the day of the discovery of nitrous oxide anæsthesia, only seven cases of fatality, the whole world over, are fairly attributable to the administration of this gas. Eight cases, then, up to the present time, make the sum total of deaths from its administration.

How shall we attempt to compute their ratio to the sum total of administration during all these years. The truth cannot even be approximated. But I shall make an estimate which I am sure you all will approve as being quite too conservative, and yet one that in its conclusions will astonish all of you, in its showing of comparative immunity from danger. It was discovered in 1844 that N^2O would induce complete narcosis. Let us assume that but 100 gallons were inhaled by any human being, during the year following its introduction. During the present year, one concern in the city of Buffalo alone has dispensed on an average 3,000 gallons per week. Who will deny that there are a hundred others averaging as great sales, taking the whole world over. (Indeed, this is by far too conservative an estimate.)

From the beginning, nitrous oxide sprang quickly into popularity, but again, for the sake of being conservative, we will assume to strike a general average by the law of arithmetical progression. The problem then resolves itself into something like this. From 1844 to 1893, forty-nine years elapsed, but as the forty-ninth year is not yet closed, we will call it forty-eight years. The first year, there were administered 100 gallons; during the present year, 15,000,000 gallons; during the entire period of its use, since 1884, 360,000,000 gallons. This sum, divided by five, (because on an average five gallons are administered to induce narcosis) results in the establishment of the supposition that 72,000,000 persons have succumbed to its influence, during all these years. If ten have died, it is but one to over 7,000,000. If a hundred *had* died, still to the

individual the risk is by no means as great as it is to take a seat in a railway passenger coach for a Sunday-school excursion.

Who would not prefer to die rather than live to experience the pain and horror of having a single tooth extracted 7,000,000 times? Well, then, if we can do nothing to prevent on an average one death in 7,000,000, we surely are warranted in administering gas. Except as a guarantee to us against the responsibility of the operation, would the attendance of a physician be of any avail during nitrous oxide narcosis? My answer is emphatically, *no*.

What can they accomplish for resuscitation in case of accident, more than the dentist of average intelligence? What *did* they accomplish in the latest unfortunate occurrences of this character?*

Few as are the casualties resulting from the administration of nitrous oxide, the discussion of the subject would be bootless if nothing comes of it looking towards still greater immunity from danger. What *are* we going to do about it?

Artificial respiration has been tried and found wanting, but we have one recourse left—forced artificial respiration.

True, it is yet an untried expedient so far as asphyxia narcosis from nitrous oxide is concerned, but I firmly believe in its efficacy. Dr. Geo. E. Fell of this city, has repeatedly sustained life by this means, literally pumping the breath of life into his patients, as one might say against their individual wills, for the cases were mostly those of intended suicide by opium narcosis. Not only has he sustained life for periods varying from one to fourteen hours, but in nearly every instance, though a seeming impossibility, normal respiration was finally re-established and his patients have lived.

*Since the meeting occurred at which this paper was read, another casualty is reported from Erie, Pa. [See *Dental Cosmos*, July, '93. "Hints and Queries."] The writer has also learned of one that occurred in Elmira, N. Y. The following, written in answer to inquiries, by Dr. A. Osgood, of Bath, N. Y., will explain it:

The case was that of a married woman of the middle class and middle age. She had taken the gas on previous occasions from the same dentist. This occurred about 5 P. M. at the close of a very hot day, and the woman had done a very hard day's work, a good portion of which was outside the house, where there was exposure to the sun. Whether she had the tooth out or not I am not certain, but I think she did. At all events, there was at first an apparent recovery from the effect of the gas, and she said a few words before the collapse came, and did not die immediately.

One unsatisfactory feature about the matter is that nobody ever knew just what the dentist gave her. The gas was of home manufacture, and he had a way of introducing some chloroform with it, and could tell but little about it himself. The gas was emptied from the tank before any investigation of its contents could be made.

Nothing was brought out at the inquest that would afford any satisfaction to an inquiring mind. The woman died, and the dentist was at the time preparing to move into Pennsylvania, which he did as soon as possible after the inquest. To be just to him, I should say that appeared to be the reason the tank was emptied in such a hurry after the accident.

If the function of respiration can be thus carried on indefinitely under opium narcosis, it seems a most rational conclusion that the period of nitrous oxide narcosis, or the period of nitrous oxide asphyxia, which ever it may most properly be termed, would be a less difficult condition to overcome. Dr. Fell's patented apparatus for forced respiration consists of a foot-bellows, re-enforced with a secondary air chamber, so that he induces continuous current of air into the lungs. This is conducted through a rubber tube, in which is inserted a set of valves which enables him to control the inhalation and exhalation.

Inhalation is induced by the force of the air current into the mouth. Exhalation occurs spontaneously as soon as this current of forced air ceases, and is caused by the contraction of the elastic tissues of the lungs on the air cells, upon the air pressure being removed. A rubber hood, somewhat similar to those used for nitrous oxide inhalation, completes the apparatus, but the operation of tracheotomy has occasionally been resorted to in order to facilitate respiration in desperate cases. I have myself reconstructed the nitrous oxide apparatus* as made by the Buffalo Dental Manufacturing Company of this city, so that I hope it will answer every purpose for forced respiration. A water faucet is provided, so that a portion of the water in the lower half of the gas reservoir can be drawn off, thus relieving the automatic cut-off which prevents gas from rushing out through the mouth piece. This valve having been relieved, pressure brought to bear on the upper or bell portion of the reservoir induces a forced current. Pure oxygen gas (red cylinder) is admitted to the gas reservoir, in the same manner as nitrous oxide, and in mixture with it. Any proportion over ten per cent. is abundantly sufficient to sustain normal oxidation of the blood as it is brought by circulation into the lungs.

The exhalation valve of the gas inhaler being removed, and a cork securely inserted in its stead, it enables inhalation and exhalation to be perfectly under the control of the operator, by the simple means of rotating the gas cut-off valve of the mouthpiece at proper intervals, first allowing the rush of the mixed gases from the reservoir to enter the lungs, then by rotating the valve, shutting off the flow, an opening being effected at the same time for the gases to be exhaled.

Trusting that I may never have occasion to try this or any other means for resuscitation upon any human being in the emergency of asphyxia narcosis, I must confess to a feeling of security during administration of nitrous oxide which I never had before, and in consequence most naturally feel disposed to urge its use upon the dental profession.

* The paper was accompanied by a demonstration with a nitrous oxide apparatus made by the Buffalo Dental Manufacturing Co., and adapted to the purpose of forced respiration by the essayist.

THE WORLD'S COLUMBIAN DENTAL CONGRESS.

HELD IN THE MEMORIAL ART PALACE, CHICAGO, ILL.,
AUGUST 14TH TO 20TH, 1893.

The Congress convened in the Hall of Washington, in the Art Building, Michigan avenue, foot of Adams street, on Monday, August 14th, at 12 o'clock M. The session was called to order by Dr. W. W. Walker, Chairman of the Executive Committee, who introduced Hon. C. C. Bonney, President of the World's Congress Auxiliary, a body whose duty it was to promote and assist the holding of Congresses in Chicago during the time of the World's Fair, by all the prominent scientific and professional bodies of America. More than one hundred such meetings have been held during the season. President Bonney welcomed the delegates and members, on the part of the Congress Auxiliary.

The officers of the Congress were duly presented and took their seats, after which the members of the Executive Committee, of the World's Congress Auxiliary, of the Women's Branch Auxiliary, all the minor officers of the Congress, etc., were in turn presented.

The inaugural address of President L. D. Shepard was then read. This was a review of the history of the inception and organization of the Congress, of the evolution of dentistry, with a résumé of its history, including the organization of the first colleges, of dental legislation, of the discovery of anæsthesia, of the use of cohesive and crystal gold, of the "New Departure," and other familiar subjects.

Following this, the representatives of foreign countries were introduced and made fitting responses. Among them were Drs. George Cunningham, of England; J. E. Grevers, of Holland; Erich Richter, of Germany; Otto Zsigmondy, of Austria; Dr. Barrière, of France; Dr. Portuondo, of Spain; Dr. Antonio Mela, of Italy; Dr. Caracatsanis, of Greece; Dr. Paul Adelheim, of Russia; Dr. J. T. Burrett, of Uruguay; Dr. E. M. Flagg, of Paraguay; Dr. Alfred Burne, of Australia; Dr. Louis Roussey, of Switzerland; Dr. J. M. Whitney, of Sandwich Islands; Dr. R. H. Kimball, of China; Dr. Sicher, of Denmark, and Dr. Takayama, of Japan.

The general session was then closed. It was announced that clinics and exhibitions would be given in the morning, from nine to eleven o'clock, at the places selected. At twelve o'clock the general session would meet, and continue until 2.30 P. M., when the sections would be called to order in the halls set apart for them. Eight sections were named, as follows: Section I., Anatomy and Histology; Section II., Etiology, Pathology and Bacteriology; Section III., Chemistry and Metallurgy; Section IV., Therapeutics and Materia Medica; Section V.,

Dental and Oral Surgery ; Section VI., Operative Dentistry ; Section VII., Prosthesis and Orthodontia ; Section VIII., Education, Legislation and Literature.

There were no meetings of the Sections in the afternoon of the first day, not enough to form a quorum attending in either hall.

TUESDAY'S MEETINGS.

The Clinics in Operative Dentistry, held in the infirmary of the Chicago College of Dental Surgery, were well attended on Tuesday morning, though there was a dearth of operators. The other clinics and demonstrations were well attended, and of interest to all.

The general session was called to order at twelve o'clock, when Otto Zsigmondy, of Austria, read a paper upon "Congenital Defects of Enamel." He said that erosion, or atrophy, was of frequent occurrence. The enamel is unequally distributed, and superficial pits of greater or less depth are found, occurring either at isolated points, or in rows, or confluent, forming furrows. Perhaps the enamel is entirely absent, and the dentine is exposed. These are symmetrical, so that corresponding teeth in both jaws are alike affected, or those in which development is synchronous, and the parts affected will be those which were developed at the same time. Thus, if a furrow be found in the first molar near the edge, one will be found half way up the crown of the central incisor.

As the defects are never confined to single teeth, the cause must be systemic, and not local, and various diseases have been ascribed as etiological factors. Little attention has heretofore been paid to microscopical appearances. A point of importance is that the same appearance may be observed in the dentine. Sections through enamel furrows show that the layers become progressively thinner, until they reach the deepest part of the depression, when it becomes reduced to an insignificant layer. It is remarkable that the dentine at these points shows evidences of incomplete calcification, with the appearance of the so-called interglobular spaces corresponding to the furrows.

In Section I.—Anatomy and Histology,—an address was delivered by the Chairman, Dr. R. R. Andrews. This was followed by a paper by Dr. W. G. A. Bonwill, the subject being "What has Dentistry to Demonstrate Against the Hypothesis of Organic Evolution."

The essayist argued that the doctrine of developmental evolution could not be true, because all human jaws, whether pre-historic or recent, were formed upon an equilateral triangle. "Any one conversant with mechanical drawing can construct a perfect set of human teeth as to size, crown surfaces and position, without ever having seen an original set, and can reproduce a working model of artificial teeth, which, in the mouth, shall work perfectly as in nature." As there has never been any

departure from this type, and never can be, it demonstrates the fallacy of the doctrine of evolution.

The paper was severely canvassed by Dr. J. J. R. Patrick, and by Dr. C. N. Pierce, as incorrect in fact and deductions, while it was approved, at least in part, by Drs. Sudduth, and Schwarz of Germany.

In Section II., a paper was read by Dr. Annie Felton Reynolds, upon "Adenoid Growths and other diseases incident to Primary Dentition." The essayist affirmed that the predisposing cause of infantile convulsions was not difficult dentition, but a rachital tendency. The time of dentition is one of great functional activity, and one of the most important abnormal conditions likely to appear at this period is that of growths in the naso-pharyngeal cavity. If these are first removed, the labors of the dentist in correcting irregularities is greatly lessened, while the well-being of the patient is infinitely promoted.

DR. FILLEBROWN differed from the speaker as to the cause of high vaults and narrowed arches. He did not think that atmospheric pressure had anything to do with it.

DR. TALBOT said that adenoid growths, diseases of the nose, arrest of development of the turbinated bones, and of the face and jaws, were all due to the same predisposing cause, and that was a neurotic heredity or condition.

A paper was read by Dr. Macarovici, of Roumania, entitled "Pulpitis Chronica Idiopathica." This is a new and morbid formation of dentine, or nodular growths of dentine within the tooth pulp. These are usually due to a hyperaemic condition of the pulp, brought on by injuries, violent movements, or intense emotion.

The paper was discussed by Dr. Grevers, of Amsterdam, Holland, who criticised it as being incomplete, inasmuch as no reference was made to the work of Drs. Weil, of Munich, and Hames, of Amsterdam.

In Section III., Dr. E. W. Rockwood, of Iowa City, Iowa, read a paper entitled, "The study of Chemistry in Dentistry."

The study of chemistry has of late years assumed additional importance in the dental curriculum. Especially is this true of laboratory work. This should be commenced as early as possible in the course, and should include organic chemistry, physiological chemistry, quantitative analysis, as well as synthetic chemistry. He urged more thorough work in this department, because the professional chemist could not do the work which the dentist requires to have done.

In Section IV., a paper upon "The Method of Inducing Local Anæsthesia by Cocaine," was read by Dr. Caracatsanis, of Athens, Greece. This agent is effective, but dangerous when injected. If the effects of the agent can be completely localized, cocaine becomes the ideal local obtundent. This the essayist has been enabled to accomplish, by first

painting the gum over teeth to be extracted with a solution of carbolic acid, followed by cocaine. When the surface is obtunded, he separates the gum from the tooth, and inserts a pledget of cotton wet with a cocaine solution. This is slowly forced up, and finally under a spray of chloroform ether menthol cocaine and mint, the tooth is painlessly extracted.

A paper by Dr. Bleichsteiner, of Austria, was read upon the cognate subject of "Cocaine Injections for the Production of Anæsthesia." He uses only a three-per-cent. solution, and claimed that with this, while it was effectual, cocaine intoxication, or poisoning, was very rare. Only nervous reflexes were ever observed, and these, however alarming they may appear, are never really dangerous.

The papers were discussed at considerable length, but nothing of special importance was elicited. It was charged that cocaine is running the course that nitrous oxide did when first introduced, and that under it many thousands of teeth are extracted that should be saved. It is, therefore, a curse to the people at large, and to all honorable dentists, and its use should be discouraged.

A paper was read by Dr. W. C. Davis, of Lincoln, Neb., upon "Obtunding the Sensibility of Dentine." This is best accomplished by drying out the protoplasm of the dentinal fibrillæ by means of alcohol and a current of hot air. After this is done, the tubules may be filled again with the resinous gum of any of the essential oils, by the use of the same current of hot air.

In Section V., Dr. M. H. Cryer read a paper upon "The Surgical Engine and its Uses." The engine was presented, its many advantages explained, and its surgical employment demonstrated.

The paper, and the various methods of surgical procedure brought up by its presentation, were discussed at considerable length.

In Section VI., Dr. H. L. Ambler, of Cleveland, presented a paper upon "Tin Foil for Filling Teeth," in which the merits of that material were urged.

DR. E. T. DARBY said that he believed that more teeth could be saved with tin than with gold. It certainly has cohesive properties, and will weld. Other speakers expressed their gratification that the merits of tin are being again recognized, after it has fallen almost into disuse for so many years, having been nearly crowded out by gold.

In Section VII., a paper was read by Dr. V. H. Jackson, of New York, entitled "Method of Constructing Spring Appliances for Correcting Irregularities in Teeth." This was a description of the very favorably known crib system of the author. It was illustrated very fully by about forty drawings of cases and appliances. The discussion was mainly

confined to questions asked of Dr. Jackson, as to the methods to be employed in certain cases, and the explaining of points that were not fully comprehended.

In Section VIII., papers were presented by Dr. Macarovici, of Roumania, upon "The Status of the Art of Dentistry and of Dentists in Roumania," and by Dr. F. W. Sage, of Cincinnati, upon "The Editorial Function in Dental Journalism." The first paper showed that while dentistry in Roumania is yet in a formative condition, it is making great progress. The second was a very thoughtful paper. It considered it a subject for regret that there are so few real editorial writers, the most of them confining themselves to work of compilation and preparation. An important function is that of criticism, and it would be well if papers to be read before our more important societies could first be submitted to editorial criticism and pruning. This would result in a higher tone in dental literature, and in better digested papers. The essayist considers the dental editors as the active agents in the formation of a literature.

WEDNESDAY'S MEETINGS.

The attendance at the clinics in the morning was good—in fact, that in Operative Dentistry, at The Chicago College of Dental Surgery, was too great for the capacity of the room—but there was again a scarcity of operators. Patients were supplied in abundance, but of the many dentists who had promised to operate, but few were in attendance. The fault was wholly in the men who failed to keep their engagements, and who were deserving of censure. The exhibition of appliances, etc., was of great interest, and drew constant crowds, but there was a lack of system in the arrangement.

The general session was called to order at twelve o'clock. A paper by Dr. W. D. Miller, of Berlin, was presented, "Concerning various Methods Advocated for Obviating the Necessity for Extracting Devitalized Tooth Pulps." The author said that the practice now in vogue among good operators of carefully removing the pulp, cleaning the canals, and filling them to their apex, is readily applicable to the six anterior teeth, and probably cannot be improved upon. When this is attempted in posterior teeth, the labor and expense are such, and the difficulties encountered so many, as to place it beyond the reach of the average patient and operator. The methods of Witzel, Baume and Herbst, for evading the necessity for this operation were detailed, and considerable stress was laid upon the latter, as given by Bödecker.

Dr. Miller believes that our efforts should be directed toward preventing the decomposition of remnants of the tooth pulp, which may be either accidentally or designedly left in the root canals, and not to vain attempts to keep it alive. The success of this will largely depend upon

the character of the antiseptic used, and upon its chemical action on the pulp. As the result of over five hundred experiments, he divides them into three classes: First, those capable of imparting powerful antiseptic qualities, such as cyanide of mercury, bichloride of mercury, diaphtherin, sulphate of copper, salicylate of mercury, oil of cinnamon, orthokresol, carbolic acid, tri-chlor-phenol, and chloride of zinc, the last named four being decidedly inferior to the others. Second, those of doubtful value, like thymol, salicylic acid, eugenol, resorcin, naphthol, etc. Third, those nearly or quite worthless, like iodoform, boracic acid, euophen, peroxide of hydrogen, iodol, tincture of iodine, etc.

Dr. Miller has not finished his experiments, but has had good results from a mixture of equal parts of sublimate and thymol, as also from cyanide of mercury and thymol. Of the liquids, he has had the best results from oil of cinnamon. He recommends the first mentioned combination.

DR. FRANK ABBOTT cleanses all pulp canals with a solution of bichloride of mercury, one grain to twenty ounces of water, using a fine syringe to wash out all particles, after they are loosened with a fine broach, and then fills with oxy-chloride of zinc, in which is mixed a drop of 1 to 2,000 bichloride of mercury. This mummifies all remnants, and preserves them. Unless there is periosteal inflammation, this is always done at one sitting. He seldom uses arsenic for devitalization.

After the general session, the sections were called to order in their several halls.

In Section I.—Anatomy and Histology,—Dr. S. H. Guilford read a paper upon "The Teeth and Hair; their Homologies and Pathological Intimacy." He said that the epidermal appendages were all correlated, and whenever there is any abnormal condition of the one, it is apt to be accompanied with the same in the other. An undue amount of hair, or its absence, is commonly associated with aberrations in the development of the teeth and of the sudorific glands. Many interesting instances were cited illustrating the fact.

DR. A. H. THOMPSON said that the teeth were not strictly dermal structures. The dentine is certainly osseous in its development. Aberrations in the teeth are not necessarily accompanied by an undue amount of hair, although if there be an unusual development of the latter, there is usually a departure from the true dental type.

A paper was read by Dr. Frank Abbott, entitled "Teeth of the Lower Jaw at Birth." It was a continuation of the studies of Heitzmann and Bödecker, in their "Contributions to the History of the Development of Teeth," as published in *The Independent Practitioner*, Vols. VII. to IX. The paper was technical in its character, and a brief abstract would not do it justice.

In Section II.—Etiology, Pathology and Bacteriology,—Dr. L. C. Ingersoll read a paper upon “The Relation of Predisposing Causes (so called) to the Active Causes of Dental Decay.” Microbes are not necessarily destructive to teeth. Chemical action causes decay, and the acids which are active may be produced either by bacterial agency, or by the decomposition of organic material upon the teeth, without their agency. The deleterious action in either case depends upon the favoring or restraining conditions as found in the teeth themselves, or in the general system. Our best means for combating decay is in promoting the resisting powers of the body. Antisepticism is not a cure; prophylaxis is.

A paper on “Oral Pathology,” by Dr. R. Finley Hunt, was read. It took up that condition known as “Rubber Disease,” produced by the wearing of vulcanite plates. Its very existence is denied by some dentists, yet the author believes that it is demonstrated. Its cure is by the substitution of metal plates, or, what is as effective, rubber plates lined with gold.

The discussion brought up the old and oft-debated question of rubber poisoning, and when it closed, the matter was left just where it was found by those on each side who were firmly convinced of the truth of their own observations and deductions.

Section III.—Chemistry and Metallurgy,—held no meeting.

Section IV.—Therapeutics and Materia Medica,—took up the discussion of local anæsthesia by the use of cocaine, as unfinished business from the last session. It was urged that every dentist should make constant use of cocaine for every operation in the mouth that was of itself painful, such as the application of ligatures, of rubber-dam clamps, etc. Some formulas for the preparation of cocaine were offered. It was stated that if glycerine is incorporated in the aqueous solution, the strength will not be lost, but will be retained for an indefinite time.

Upon the other hand, it was urged that the indiscriminate use of a drug so powerful in toxic properties should be emphatically condemned by every professional body. It is possible and practical to apply a ligature or a rubber dam painlessly. The dentist who attempts to mask his own lack of skill by the application of dangerous drugs, is not fit for practice. In response to this, it was denied that cocaine poisoning would be induced by the amount necessary for the production of merely local anæsthesia. If the whole amount were placed in the stomach of a baby at one time, it would not injure it. The answer to this was, that hypodermic injection intensifies the action many times over mere ingestion, and that cocaine poisoning has been known to be induced in certain cases by the injection of very small doses.

The general summing up of the impression produced by the discussion was, that cocaine in small doses, if hypodermically injected, may produce alarming symptoms in some cases, and that its use is contra-indicated in certain conditions of the system, and that its indiscriminate use by men who are incompetent to determine the physical condition with some degree of accuracy, should be decidedly discouraged.

A paper by Dr. Hedwig Stahlberg, of Finland, was read, entitled "Ethyl Chloride as a Local Anæsthetic." This is employed in the form of a spray directed upon the part to be obtunded, and induces local anæsthesia by a very rapid lowering of the temperature, and without serious after results.

A paper by Dr. James Caracatsanis, of Athens, Greece, was read, entitled, "Treatment of Alveolar Pyorrhœa." He divides the cases into four classes: Of the first stage, when the suppuration is confined to the neck of the tooth; of the second stage, when it has reached the upper portion of the cementum; of the third stage, when it involves the whole of the cement and periosteum; and of the fourth, when the teeth are altogether loose. The treatment is varied accordingly.

In Section V.—Dental and Oral Surgery,—a paper was read by Dr. T. W. Brophy, entitled, "Surgical Treatment of Palatal Defects." [A full abstract of this paper may be found on page 171 of this number.—EDITOR.]

In the discussion, Dr. Barrett said that he had known the operation, and watched some of the cases since it was first introduced. It is radical, and for those to which it is adapted it is undoubtedly the only permissible method. It is an original operation, and as high authority as Prof. Senn has pronounced it the best original contribution to operative surgery of the decade, and he proposes for it the name of "The Brophy Operation."

In Section VI.—Operative Dentistry,—Dr. Emil Schreier, of Austria, read a paper on "The Treatment of Infected Root Canals with Kalium and Natrium." The essayist said that the difficulties encountered in removing from tortuous root canals their contents after devitalization, were sometimes insuperable. The method advocated in the paper was their chemical decomposition within the canal, when they were easily washed out. This is done by the introduction of potassium and sodium in a metallic state, upon the end of a nerve needle. Potassium and sodium hydroxids are formed, and these in connection with the fat of the pulp form a soap. These agents also destroy any bacteria which may be present.

In the discussion, the essayist in answer to questions said that its use was not painful, but that a great amount of heat is developed, which can only be controlled by the amount of the material used at once. If too much be employed, it may produce an explosion.

Dr. A. H. BROCKWAY said that he had been using the material for some time, and had found no difficulty from the heat evolved. The soapy contents of the canal may be cleared out with a few fibres of cotton on a broach, and after drying, the canal may be filled. It may be used immediately after devitalization, or when the pulp is partly decomposed.

A paper was read by Dr. W. B. Ames, upon "Oxy-phosphates." It dealt rather with the physical than the chemical properties of the material. A reliable oxy-phosphate cement is necessarily irritating to vital tissue. Not only the liquids, but the powders of these vary very widely, and their virtues are correspondingly different. Not infrequently the liquid of one make, and the powder of another, may be advantageously used.

Dr. E. T. Darby, had never found anything equal to Poulson's cement for filling purposes. Eiseelter's is excellent, but is not fit for crown and bridge work, as it sets too quickly. For the latter purpose, that of Ash & Sons answers best.

In Section, VII.—Prosthesis and Orthodontia,—the discussion of the paper presented at a previous session by Dr. V. H. Jackson, was first in order.

After this, a paper by Dr. Caracatsanis, on "The Possibility of Avoiding Metallic Clasps in Partial Dentures of Vulcanite," was read. The essayist accomplishes this by the use of white caoutchouc, or rubber. With points of support that are seemingly insignificant, he finds no difficulty in retaining a partial denture, at a great saving of time and material, and with added comfort to the patient.

Dr. HASKELL could see no objection to the use of metal clasps, provided they were properly made and adapted. He did not think it necessary that a clasp should fit the tooth closely, but the method of soldering it to the plate was very important. The point soldered should not be more than three-sixteenths of an inch, and then there would be a constant springing under every strain, and the friction would be very much reduced.

A paper was read by Dr. C. L. Goddard, upon "Separation of the Superior Maxillæ at the Symphysis." This occurred in the process of spreading the arch of a young miss of fifteen, by means of a jack-screw. It was attached to the first bicuspid and first molar on each side, not coming in contact with any of the six anterior teeth, yet the central incisors were separated the sixteenth of an inch, while a depression existed between them. This must have been the result of a separation of the maxillary bones.

Dr. E. S. TALBOT said that he had frequently brought this about in regulating teeth for young persons of twelve or fourteen years. It is so

much gained, for if the jaws be held in that position, the space will fill in with bone.

In Section VIII.—Education, Legislation and Literature,—Dr. G. V. Black read the report of the Committee on Nomenclature. The task set the Committee was to present a plan by which a universal system of nomenclature may be adopted by the Congress, that will be acceptable to the profession of the entire world. Within the last two and one-half years, 2,965 persons have contributed articles and books to the literature of dentistry, in the English, French, German and Italian languages. The number of journal articles contributed during that time, exclusive of editorials, is 6,314. To harmonize the views of so many writers is very difficult. The scheme presented involved the following points :

1. The plan to be the same in all languages.
2. Use terms from the Greek and Latin wherever practicable.
3. When impracticable, agree upon a word from some other language.
4. When this is impracticable, use terms from each vernacular.
5. Adopt the general rules followed in other sciences.

The following general rules were recommended :

1. Carious cavities to be designated by the surface involved.
2. When two surfaces are involved, compound the words.
3. The same rule should be followed where there are three surfaces.
4. Cavities in angles to be named after those angles.
5. Mesial and distal surfaces to be denominated proximal.
6. In superficies, qualify with an appropriate adverb.

The report recommended that a commission be formed to follow up and complete the work thus outlined.

DR. GARRETT NEWKIRK read a paper entitled, "Nomenclature relating to forms of the Dental Arch and Special Positions of the Teeth." This was illustrated by diagrams. It proposed that the terms used in botany to describe the forms of leaves be adopted in describing the dental arch, as for instance, the term ovate, or ovoid, derived from ova, an egg, the upper, or apex part being named the ap-ovoid, this to be applied to the so called V-shaped arch, while the so called saddle-shaped arch would become the constricted ovoid. Normal arches would be named from the basal segment of the egg, and would become the bas-ovoid form. A further development of this system would afford proper terms for all forms of irregularities. Divergences of single teeth would be designated as protrusal, intrusal, extrusal, and subtrusal, while rotary displacements would be called torts, or torsions.

DR. J. J. R. PATRICK said that this is a question that will never be settled, but we learn something from every discussion of it. Prognathism is never seen in the deciduous teeth. He thought there are terms

in common use that are preferable. It is advisable to introduce as few new words as possible. There will be no fixation of nomenclature, until there shall be no further development in science.

A general evening session was held, at which Dr. W. X. Sudduth read a paper entitled, "Some of the forces that Influence the form of the Jaws and Teeth during the Process of Development." The paper was illustrated by photomicrographs, projected upon the screen by the oxy-hydrogen light.

At the same session, Dr. E. D. Caush, of England, read a paper upon "Some Changes that take place in and around the Pulp Canal." The paper was technical, and its substance cannot be compressed into a brief abstract.

DR. GEORGE CUNNINGHAM, of England, read a paper upon "Luxation, or the Immediate Method in the Treatment of Irregular Teeth." It consisted of a description of cases treated by the immediate method, illustrated by a large number of slides projected upon the screen.

THURSDAY'S MEETINGS.

Clinics were held as usual in the morning, but they were not of very absorbing interest. The operations were usually simple in character. Dr. Brophy, however, removed a tumor from the antrum of a lady about fifty years of age, which involved the most of the right side of the superior maxillary, extending to the orbital plate and involving the vomer. Dr. Cunningham exhibited his process of continuous gum work with a low fusing body, and his method of staining artificial teeth to counterfeit defects of the natural organs.

The general session was called to order at twelve o'clock. A paper was presented by Dr. J. M. Whitney, of Honolulu, entitled, "Among the Ancient Hawaiians." The author gave a sketch of the habits and food of the early Sandwich Islanders, and an account of a visit to some ancient burial caves in the Island of Hawaii, where he secured about thirty skulls, which were exhibited. The essayist states that there was evidence of nearly all the dental diseases of the present day, not more than twenty-five per cent. being free from caries, so that the supposed immunity from oral troubles of people living under the most favorable savage conditions is all a myth. The greatest irregularities were found in connection with the development of the third molar.

An abstract of the History of Dentistry in the United States, was then presented by Dr. J. Hayhurst.

The sections met at the regular hour, in their several halls.

In Section I.—Anatomy and Histology,—Dr. A. H. Thompson read a paper entitled, "The Pedigree of the Central Incisor." This tooth in

man is unique, in that while all the other teeth have undergone modifications and specializations, the central has preserved its original form and function. The essayist compared the incisors of the different orders of animals, and pointed out the modifications which the central incisors have undergone through specialization of the other teeth. This tooth in man has lost nothing in the evolution of the species, and is but little elevated above that of the apes.

DR. SUDDUTH said he had noticed among the teeth which he handles each year, that there is an increasing proportion of centrals with short roots, and it was a query whether this was a part of the process of retrogression.

DR. ABBOTT holds the theory that this was due to a specific disease of the system. He does not believe that any of the teeth are undergoing a process of suppression, but thinks that thousands of years hence the type will not be materially changed.

DR. EBEN M. FLAGG, of Asuncion, Paraguay, read a paper entitled, "The Human Temperament in its relation to the Human Tooth." The essayist took up the four elementary temperaments, bilious, sanguinous, nervous and lymphatic, with their modifications, sketching the peculiarities which distinguish each, and giving instances typical of them. Each has a type of dental development peculiar to it, and the artistic dentist will study that type, with a view to reproducing it when there is a necessity for artificial substitutes.

DR. THOMPSON thought this a subject that should receive more attention in our colleges, and that students should be taught to distinguish types, that their work might the more closely follow nature. One thing that has retarded this study, is its association with the absurdities of physiognomy and phrenology.

DR. SUDDUTH said that temperament has much to do with the intensity of inflammatory processes. In the sanguinary temperament these take on a very acute form, while in the lymphatic they are sub-acute and sluggish.

In Section II.—Etiology, Pathology and Bacteriology,—Dr. J. P. Wilson read a paper upon, "Pathological Conditions of the Air Cavities of the Cranium, resulting from Dental Lesions." These are of frequent occurrence, and usually find their expression in a nasal catarrh, the nose being the only outlet for the secretion of these cavities, and one continued stretch of mucous membrane, which is continuous with that of the nares, lining them. Diseased teeth are the most common cause of affection of the maxillary sinus, and this by continuity of the mucous membrane may spread to other cavities.

DR. ABBOTT said that in diseases of the antrum especially, all that is necessary is to remove the cause of the trouble. After that the treatment

should be mainly directed to cleanliness. Irritating remedies should never be injected.

DR. G. V. BLACK cited a case in which a post-mortem revealed a large pus-pocket in the anterior part of the brain, caused by nasal catarrh, and the cause of death.

No other paper being ready, the first subject assigned for discussion. "Can Apical Pericementitis occur in connection with Roots which have been perfectly Sterilized and Filled, and if so under what Circumstances," was taken up.

Dr. A. O. RAWLS said that to sterilize a tooth perfectly, the dentine must be aseptised. This was difficult, and might be the cause of future trouble.

DR. WILSON said that in devitalizing a tooth with arsenic, it was possible to devitalize the cementum at the apex, and this might produce subsequent pericementitis.

In Section III.—Chemistry and Metallurgy,—no meeting was held.

In Section IV.—Therapeutics and Materia Medica,—Dr. Thomas Fillebrown read a paper entitled, "A new Apparatus for Maintaining Anæsthesia without a Face-Piece, and with the Mouth Open." This consisted of a bottle of ether, into which was inserted a tube from a bellows, reaching nearly to the bottom. A short tube, which did not reach to the surface of the ether, was inserted, and through this the air saturated with the vapor was discharged within a few inches of the patient's face. With this, complete anæsthesia could be produced and maintained at will, without coughing or nausea.

A paper by Dr. Poinso, of France, was read, upon the "Extraction of the Pulps of Teeth in a Calcified State by Trepanning." It consisted in removing, by means of circular drills, preferably of diamond chips, a round button above the pulp, which could subsequently be closed by a wooden plug, thoroughly aseptised.

In Section V.—Dental and Oral Surgery,—a paper was read by Dr. Louis Ottofy, upon "The History and the Present Status of the Transplantation of Dental Tissues." In August, 1881, at a meeting of The Central Association of Dentists, held at Heidelberg, in Germany, Dr. Witzel presented casts of the mouth of a lady of fifty years of age, in which he stated that he had *replanted* an incisor which had been diseased, and *implanted* a dead incisor. A careful examination did not enable one to detect which was the transplanted and which the implanted tooth. Dr. E. A. Bogue said in 1885, that two years previously, he was informed that a number of years before, a gentleman had implanted teeth into sockets artificially prepared by himself, the teeth having been taken

from the mouth of a patient in an adjoining room. They were deprived of their pulps, the roots were filled, every antiseptic precaution being observed, but in two years only one of them remained, the others having gradually loosened from absorption of the roots.

Sometime after this, Dr. W. J. Younger re-introduced the operation in the United States. Implantation has now been practiced for a sufficient number of years to give it an established place in oral surgery. All dental operations are of a transitory nature, and this is not more so than many others. An occasional failure should no more cause its abandonment, than that of any other like operation.

DR. YOUNGER exhibited casts of teeth that had been implanted eight years, and which were yet in good condition. In answer to a question whether, when the artificial socket was partially outside the alveolar walls, in cases in which there had been considerable absorption, there was a development of alveolus which would entirely enclose the tooth, he replied that within two or three months there was a new deposit, the same as when the tooth had grown during eruption.

DR. BARRETT said that he could not give his assent to the theory advanced by Dr. Younger, that the pericementum in implanted teeth should be preserved because it became revived. He believed that there was a new growth of pericementum, or periosteum, and this was possible, because we know that osteoblasts are found within the substance of bone, and form initial points for growth.

In Section VI.—Operative Dentistry,—Dr. Caracatsanis read a paper on "The Treatment of Dental Caries in the Second, Third and Fourth Degrees." A translation was read by the Secretary. The paper detailed the methods of treatment to be pursued in the later stages of dental caries.

DR. GEORGE W. WHITEFIELD read a paper on "Soft Gold, and Galvanic Action between Gold and the Baser Metals." The essayist discussed the various forms of electricity, the methods of production and modes of action, after which he demonstrated the galvanic action that takes place between gold and amalgam by the use of a galvanometer. He showed that within the mouth there exist the exciting fluids, and that galvanic currents must result. In the laboratory of Northwestern University, Professor Crew tested the voltage of a battery composed of a small gold and a small amalgam filling, held in the mouth and acted upon by the saliva, and found it nine-tenths of a volt, equal to a Daniell cell.

DR. PRUYN said that the curses which are heaped upon amalgam should be visited upon the careless operator. He had never seen the alarming results from electricity generated in the mouth that had been mentioned

by the essayist. The combination of gold and amalgam as filling material, will preserve teeth better than gold alone.

DR. GORDON WHITE was called upon to explain his system of sponge grafting. For chronic fistulous openings, he burrs out the bone, washes with water that has been boiled, and inserts a piece of sterilized sponge, first having amputated the diseased root. In a short time the cavity is entirely closed, the sponge is absorbed, and new tissue takes its place.

In Section VII.—Prosthesis and Orthodontia,—Dr. C. S. Case read a paper entitled, "Some principles governing the development of Facial Contours in the practice of Orthodontia." He believes that we are upon the eve of a renaissance in orthodontia, which will not be satisfied with the correction of malposed teeth, but will include the correction of all facial deformities resulting from irregularities of the teeth and jaws. Little attention has been paid to movements of the roots of teeth, most practitioners being content with securing a different inclination. It is possible to correct, with certainty of success, any marked depression or protrusion of the lip due to mal-position of the roots of the teeth. He no longer attempts to reduce a prognathous lower jaw by external pressure upon the chin, but depends upon rubber bands extending from an appliance on the lower jaw to one upon the upper. He described the construction of an apparatus for forcing the roots and adjoining bone of the anterior teeth forward. A number of models were presented, illustrating the action of the apparatus under different conditions.

DR. G. V. BLACK said the bones of children may be easily bent, and the lower jaw formed no exception to the rule, but their progress is always slow. Such an operation as that described should be commenced as soon as there were permanent teeth to which the apparatus could be attached.

DR. E. A. BOGUE said the difficulty in reducing prognathous jaws was, that there had been no point to use as a fulcrum. Perhaps the appliance of Dr. Case would supply that. An examination of the models certainly showed that the jaw had been bent.

The section then took up the discussion of the topic for the day, "What are the Etiological Factors in the production of (a) The protruded lower jaw; (b) The retracted lower jaw? When this form of irregularity is corrected by 'jumping the bite,' does a compensating adjustment take place in the temporo-maxillary articulation?"

DR. TALBOT said that the jaws develop in accordance with development of the brain; we get from this at times protrusion, and at other times arrest of development.

DR. GODDARD did not think there was a possibility of jumping the bite permanently. This would imply a change in the glenoid fossa that seemed impossible.

In Section VIII.—Education, Legislation and Literature,—Dr. W. O. Kulp read a paper entitled, "Dental Nomenclature," which was an amplification of the system of terminology advanced by him some years ago, before the American Dental Association.

DR. J. L. SICHER, of Denmark, presented a system of notation for the teeth and cavities, which was simple, but not complete.

Dr. H. B. NOBLE read a paper upon "Dental Legislation." He said that there was a surprising lack of information concerning the requirements in other professions. Dr. Sudduth had stated that lawyers, going from one State to another, were subjected to examinations by the courts, and that before admission to practice in the Supreme Court of the United States, they must submit to an examination. This was not so. There is a feeling that no professor in a dental college should have place upon a dental examining board. They are the best men for such a position, and no board should exist without at least one teacher upon it. We should guard well the entrance into the dental profession, but a man once regularly admitted through the proper channels, should not be excluded from any particular section. The colleges are the sources of strength, and upon them we must rely for educating and elevating dentistry, and all legislation should be directed to the encouragement of systematic college training.

In the evening, Dr. R. R. Andrews presented a paper entitled, "A contribution to the Study of Development of Enamel," which was profusely illustrated by photomicrographs projected upon the screen. The limits of this sketch are utterly inadequate to give a comprehensible abstract of the paper, which was a continuation of the one presented by him before the Tenth International Medical Congress, at Berlin, in 1890.

FRIDAY'S MEETINGS.

The Clinics in the morning were of less interest, upon the whole, than on some of the preceding days. Indeed, they have at no time formed a very important part of the Congress. This was due to a number of different causes, the fault being chiefly with the operators themselves, many of whom did not keep the engagements made. The infirmary of the Chicago College of Dental Surgery furnished an abundance of patients who, however, became tired of attending day after day without being called to the chair. There were plenty of spectators among the dentists, but few who came prepared to operate.

Among other demonstrations, Dr. C. C. Carroll inserted an aluminum amalgam filling, and gave an illustration of his method of casting aluminum plates. Dr. Caracatsanis, of Greece, removed six teeth under cocaine, it taking a long time to secure anæsthesia. Dr. L. C. Bryan, of Switzerland, demonstrated the immediate correction of irregularities by means of his forceps.

The general session met at the appointed hour, when a paper by Dr. John Girdwood, of Scotland, upon "English Tube Teeth," was read. The essayist said that it was a puzzle to English dentists, who largely use these teeth, why they have never become popular in America. In crown and bridge work, specialties indigenous to America, they are particularly useful. They are superior as masticators, and are stronger than flat teeth; they allow of easy removal for repairs, all danger of warping during soldering is avoided, and they are more adaptable. A small stock goes a great way, and hence they are cheaper in the end. They are more comfortable to wear, and more easily kept clean. Their employment, however, requires some special instrument. The essayist gave directions for their use in different cases.

A paper was read by Dr. Thomas Fillebrown, upon "Hypnotic Suggestion as a Dental Obtundent and Sedative." The essayist related instances in which he had been enabled to perform operations under hypnotic influence, for patients who had found it utterly impossible to undergo the usual methods in dental practice. He predicted that in five years, the practice of every intelligent dentist in this country will be governed by the principles of hypnotic suggestion. The paper was very long, and took up the most of the time of the session.

Section I.—Anatomy and Histology,—took up the discussion of the paper of Dr. Fillebrown, on Hypnotism. Dr. H. J. McKellops said that comparatively few have the power of hypnotizing. He claimed that by kindness and gentleness, by careful operating and the best methods, everything claimed for hypnotism could be accomplished.

DR. FILLEBROWN said that Dr. McKellops *did* hypnotize his patients by the means which he used. Every patient was a subject for the influence, provided the operator was in some kind of sympathy with them. Many dentists lack that kindness and gentleness which would make them successful.

DR. J. Y. CRAWFORD said that if he could be made to believe that he could exercise only one faculty at a time, he would have faith in hypnotism; but he was not so credulous. It is too closely associated with quackery of all kinds to engage the attention of practical men.

DR. FILLEBROWN illustrated the methods which he used in producing the state.

In Section II.—Etiology, Pathology and Histology,—a paper was read by Vida A. Latham, upon "Palatal Diseases as applied to Dentistry, their Pathology, with Cases." These are not so rare as is often thought. The physician sees many cases of tonsillitis, but seldom considers them in relation with associated parts. The palato-glossal and the palato-pharyngeal folds should always be studied in connection with that affection.

The diseases of the palate may be grouped into the following classes: congenital malformations, inflammations, ulcers, necrosis, and tumors. These were described, and their pathology sketched. A number of cases illustrative of palatal diseases were detailed.

The second paper presented was by Dr. L. Van Orden, of San Francisco, and was entitled "Some Facts, with Models, showing the Relationship of the Dental Inter-articulation, with more or less Obscure Pains about the Mouth and Jaws." A number of cases were related, illustrative of the subject.

In Section III.—Chemistry and Metallurgy,—as usual there was no meeting. These very important subjects seemed not to have attracted the attention of either the essayists or the members of the Congress, and hence the Section was a comparative failure. This was not at all creditable to either the meeting or the profession.

In Section IV.—Therapeutics and Materia Medica,—the first thing ordered was the discussion of the paper by Dr. Poinot, of France, presented the day before. Dr. Cravens thought the paper had suffered in the translation, as the ideas advanced were not thoroughly comprehended. The central thought seemed to be that by trepanning the pulp, was meant the boring into the pulp chamber and removing the calcification which surrounded it.

A paper was read by Dr. Carrie M. Stewart, upon "Experiments with Bichloride of Mercury." The essayist said that because of the peculiar action of the drug upon material of an albuminoid character, its efficacy as a germicide is believed by some scientists to be less than that usually assigned to it. The albumen is superficially coagulated, the interior of the mass escaping its influence, through lack of penetrating power in the solution. It has been urged that in the action of bichloride of mercury upon germs, the same effect is produced. A series of experiments to determine this point was detailed. The result was the conclusion that it lacks in penetrating power, yet those agents which are as efficient are hard to find. The ideal germicide has not yet been discovered.

A paper by Dr. Lecaundry, of France, was read, upon "Treatment of Abscess of the Maxillary Sinus." The cases noted by the essayist were most often caused by the second bicuspid; less frequently by the cuspid and first molar. The remedy used which presented the best results, was zinc chloride. The formula is, zinc chloride 1 gram, phenic acid $\frac{1}{2}$ gram, distilled water 100 grams.

A paper by Dr. Denis, of France, was read, entitled "Boracine (Tetraborate of Soda)." This antiseptic is neither caustic, toxic nor irritating, and it is tasteless and odorless. While it has not in his practice

entirely supplanted the different antiseptics already known, yet in the treatment of affections of the mucous membrane it has produced astonishing results.

As there was but a small attendance at this meeting, the section then adjourned *sine die*.

In Section V.—Dental and Oral Surgery,—one of the general topics for discussion was introduced: "What Neoplasms, both as to kind and degree, necessitate the Excision of the Inferior Maxilla in whole or part, when associated with that bone?"

Dr. M. H. CRYER said that the diseases of the inferior maxilla were either explainable or unexplainable. An ordinary alveolar fistula is explainable. But there are fungoid growths that are unexplainable. If you know the cause of the disease it can be cured. If an unexplainable growth appears, it should either be cut out or let alone. Caustics are not permissible, because they will bring about a breaking down of tissue and aggravate the condition.

How far shall we remove the bone that is the seat of a neoplasm? The latter should be removed in any case, and if it includes but a small portion of the bone, remove that; if a large portion, that should be cut out. It is safe to go a little beyond, but the jaw should not be removed when but a small part is affected. Cut out the growth, and then examine to see how far the bone is affected, but do not remove the jaw and neoplasm together, unless you are certain that all are diseased.

Dr. BROPHY, the chairman, congratulated the section upon the work done, and upon motion the session adjourned *sine die*.

In Section VI.—Operative Dentistry,—a paper was read by Dr. Geo. W. Whitefield, entitled "Conservative Methods of Treating Fractures of the Anterior Teeth." The essayist said that accidents to the incisors are common, sometimes a mere corner being chipped off, and in other instances the whole crown being fractured. The destruction of the pulp in children's teeth, and the placing of an artificial crown, is not the best way to manage the cases, if it is possible to preserve the vitality of the tooth, because thereby all further development is prevented. The essayist detailed a number of cases, giving methods of filling over exposed or nearly exposed pulps, by which they were preserved alive. When the tooth was shortened, a device which was described was used to pull the tooth down into line.

Dr. ROLLO KNAPP said that the directions given with some of the oxy-phosphate cements, instructed dentists to fill a bottle with ice, or ice water, and upon the flat side to mix the cements, and that this would retard the setting. This was impracticable, because the cold glass caused a condensation of moisture, and it was impossible properly to mix the

cement. He produced a bottle filled with ice, and challenged any one to try the experiment. No practicable plan has yet been presented by which the setting of oxy-phosphates can be retarded.

DR. D. M. CATTELL then read a paper upon "Operative Technics." He said that this was a title recently added to the curriculum of a few dental schools. It was intended to supply that familiarity with instruments which is gained under a preceptor. It had for its aim, first, manual training; second, methodical system in such technics; third, familiarity with the anatomy of teeth; fourth, teaching the students how to think for themselves. As now presented, it is divided as follows:

1. A study of technical terms.
2. A study of typical tooth forms.
3. A study of pulp chambers and canals.
4. The anatomy and histology of the tooth.
5. Free-hand drawing and modelling.
6. A study of common medicaments.
7. Practice upon a "Dummy Patient."
8. Pulp capping and devitalization.
9. Putrescent and decomposed pulps.
10. A study of alveolar abscess.
11. Preparing and filling root canals.
12. Bleaching and whitening teeth.
13. Preparing instruments and sharpening them.
14. Preparing cavities for filling.
15. The selecting of filling materials.
16. Miscellaneous matters in common practice.

The paper was commended by different speakers. Dr. Thomas Weeks urged the importance of the early entrance of students into college, where they can have systematic training, rather than to spend the time with a preceptor.

DR. CARLETON said that operative technics should be under the direction of the chair of operative dentistry. The whole thing should be a matter of sequence, and the didactic and manual teaching should go hand in hand.

DR. CATTELL said that the paper could only be considered in the light of a syllabus. The course should cover at least six months, and in that time many things not noted in the paper may be presented.

Upon motion, the Section adjourned *sine die*.

After the close of the meeting, the representatives of eight colleges met and organized an Association of Teachers of Operative and Prosthetic Technics. Dr. D. W. Cattell was elected president, Dr. J. A. Dade, secretary. After appointing a committee on by-laws, it adjourned to meet at the call of the president.

Section VII.—Prosthesis and Orthodontia,—met and listened to a paper by Dr. G. V. I. Brown, upon "Prudence and Gutta-Percha in Crown and Bridge Work." The Logan, Bonwill and Howe crowns are usually set with amalgam or cements. But any crown that does not depend upon a band, when set with these, is unsafe from a number of standpoints. Gutta-percha is not subject to so many disadvantages. It is impervious to secretions and bacteria; it does not irritate surrounding tissues; it is easily removed when necessary. Against these it has one disadvantage—difficulty of adjustment. The essayist prefers the common, red gutta-percha. He heats both crowns and setting material on a tray, spreads a thin coating of gutta-percha over the inner surface of the crown, coats the surface of the roots with eucalyptus, and then with a thick solution of chloro-percha, sets the crowns when as hot as they can be held in the fingers, and drives them home, any surplus finding its way out through a vent left for the purpose. But care should be used to get the proper amount. If the crown needs to be removed, it is warmed by a current of hot water.

DR. GEORGE J. DENNIS read a paper upon "A Study of the Masticating Force of the Jaws." He said that no means of testing the force exerted by the jaws had been devised, but it must be very great, as heavy bridges and dentures were crushed by it. Professor Black had said that it far exceeded that of the hand, and must amount to hundreds of pounds.

Dr. J. J. R. PATRICK said that he had prepared, from one used in the iron region of Pennsylvania for testing iron, a machine with a register of ninety-five pounds. But one person had been found whose jaws could exert the full force indicated by the register. From forty to sixty mouths had been tested, and the range between the molars of the adult was from sixty-five to eighty-five pounds. Between the bicusps, this was diminished from five to fifteen pounds. Between the incisors, there was a further diminution of about twenty pounds, the range being from thirty to fifty pounds. In the mouths of persons wearing artificial dentures, the amount of force exerted was probably only from five to twenty pounds.

In Section VIII.—no quorum was present, and it adjourned *sine die*. A paper had been presented by Miss Martine Magnus, of Norway, but it was not read. Its subject was "Dentistry in Norway, and the use of Cocaine as a local Anæsthetic."

SATURDAY'S MEETINGS.

There were no clinics in the morning, nor section meetings in the afternoon. The general session was called to order at eleven o'clock, and resolutions of thanks all around were voted. It was announced that the remaining papers would be read by title, and would appear in the printed reports of the Congress. Among them were reports from

the committee on the History of Dental Legislation, Dr. William Carr, chairman, and the committee on the Care of the Teeth of the Poor, Dr. T. H. Paramore chairman. The topic for general discussion, "What relation shall Dentistry hold to Medicine," was then taken up.

DR. J. D. PATTERSON said that the discussion of this subject in the past had not benefited dentistry, and he did not think it promised much for the future. The most rapid progress had been made as an independent profession.

Dr. J. Y. CRAWFORD would prefer to have the question stated, "What relation *does* dentistry hold to medicine?" That it is a part of the healing art cannot be questioned, and it is therefore a part of medicine, when properly practiced. If the question as formulated is intended to cover the attitude of the dental towards the medical profession in scientific and practical work, in furthering the interests of humanity through the healing art, then it is appropriate enough. There is no doubt that to accomplish the most possible, there should be a well-equipped section of dental and oral surgery in every medical organization in the country, so that by bringing together those who are laboring for the general advancement of the healing art, we should get a full recognition of the idea that dentistry is a part of hygiene, and that the perpetuation of civilization largely depends upon it. Dentists to-day are not sufficiently versed in the medical and surgical treatment of the different kinds of facial injuries.

The report of the committee on prize essays was then read, adjudging to Dr. George Cunningham, of Cambridge, England, the prize for the best essay upon Dental Hygiene, and awarding the gold medal to him. This was then presented. It consists of a solid bar, from which is suspended a medal properly engraved, the whole being of solid gold, and contained in a suitable morocco case.

DR. GODON, of Paris, France, read a series of resolutions signed by all the foreign representatives, expressing their thanks to all connected with the Congress for the many courtesies received.

DR. FLORESTAN AGUILAR, of Cadiz, Spain, on behalf of the foreign representatives, moved a vote of thanks to the members who had been their hosts on the occasion of this memorable meeting.

In the absence of the chairman of the Executive Committee, Dr. J. Taft reviewed the work of the Congress, and congratulated the profession of America on having carried to such a successful termination a work of such importance.

It was announced that the total registration of the Congress was, American members, 999; Foreign representatives, 116; making a total of 1115.

The president then briefly recounted the work of the various committees, and finally declared the World's Columbian Dental Congress adjourned, *sine die*.

CORRESPONDENCE.

LETTER FROM DR. R. R. ANDREWS.

Editor Dental Practitioner : The Peabody Museum, at Cambridge, has lately come into possession of some archæological treasures that are of special interest to dentists. They consist of skeletons, skulls and teeth, glass and stone instruments, with a magnificent collection of pottery which belonged to a people who lived two thousand years ago. They were obtained by the Hemenway expedition, a series of explorations conducted by Boston archæologists, at the expense of certain wealthy Boston people, and carried on in Arizona, New Mexico, Mexico, and lately in Central America. The latest work was done in Yucatan and Honduras, under the charge of Mr. John G. Owens, a rising archæologist, who died while on duty in Honduras. The exhibition is at this time in charge of Mr. C. P. Bowditch, of Boston. For the information contained in the letter, I am indebted to Mr. M. H. Leville, who was one of the explorers accompanying Mr. Owens.

That which specially interests us is the skulls and fragments of jaws, containing teeth that were so filed and ornamented during life as to indicate a wonderful skill in this kind of work among the prehistoric people.

The place where the excavations were made was covered by an old forest growth, which it was necessary to cut away before anything else could be done. The graves were found near the ruins of a temple, under what was apparently the floors of the living rooms, in the long-forgotten cities of the past. They were either stoned or cemented, the bodies first being covered with a loose earth. Some of the graves consisted of deep cemented chambers, under the ground, their form being that of the triangular arch so commonly found in the buildings of this very ancient people. Most of the teeth were obtained at Copan, Honduras. There was found with them the remains of a people of a considerably later date, though they existed long anterior to the time of the discovery of the country by Europeans. I send you a photograph of a skull of one of these latter, found at Labna, that shows the curious work done upon the teeth. It will be seen that the six anterior upper and lower teeth are filed into fantastic shapes. As no metals of any kind were found in the graves, it is probable that it was done with pieces of obsidian, or volcanic glass, which can readily be fractured in such a way as to present a very keen cutting edge or point. The age of this person at the time of death was about twenty years, judging from the erupting wisdom teeth. There was no caries, all the teeth being sound, but the left superior cuspid was evidently retarded in its development, and was erupting about a quarter of an inch inside the arch.

But yet more strange were the teeth found at Copan, in Honduras. Some of these have small circular pieces of jade, inlaid in a hole drilled or bored in the face of the incisors and cuspids. One found in a lateral incisor may stand as a type of the whole. The inlay is a little more than an eighth of an inch in diameter, the outer surface being slightly rounded and highly polished, while the piece is beautifully fitted into the cavity artificially made for it. Indeed, this could not be better done by the most skillful workman of to-day, with all the advantage of modern implements. A white cement was used to hold these settings in the teeth, and it is possible that this may have been used alone as an ornament. Notwithstanding this decoration, tartar encased the whole tooth, save in the place of the setting.



Skull Found at Labna, Yucatan, Showing the Method of Filing the Teeth.

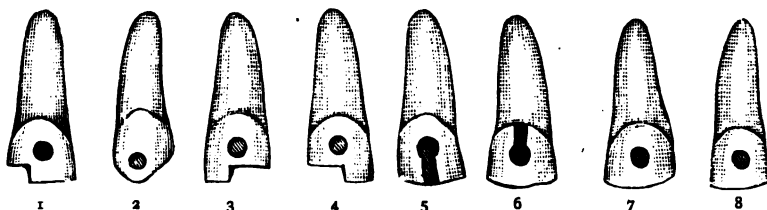
In another skeleton, the four upper incisors were inlaid with green jade. The two centrals were also filed, as seen in number 3 and 4 of Cut II. The left upper canine had a circular piece bored out of the enamel on the face of the tooth, making a hole three-sixteenths of an inch in diameter, and nearly an eighth of an inch in depth. It contained no inlay, but traces of a dark red cement still adhered to the sides of the cavity. These teeth, as in the case of the others, were covered with tartar, showing that after all the trouble incurred in their ornamentation, they had apparently never been cleaned.

The most interesting dental curiosity in the collection is an implanted tooth, made of some dark stone. It was found neatly fitted in the socket of an inferior left lateral incisor, and is shaped very much like the natural tooth. That it had been worn for some time during life, was indicated by the thick incrustation of tartar upon it.

Altogether, the collection is the most interesting and curious of any that has ever been exhibited to dentists. It is not yet open to the public, as it is not classified and arranged.

There was considerable caries in the teeth of some of the specimens, but there is no indication that any of them had been filled for prophylactic purposes. In some cases the inlays had dropped out, and the cavities were filled with some kind of a red cement, probably for ornamental purposes, as other carious cavities in the same mouth contained

nothing of the kind. Many of the teeth were completely covered with tartar, and in one case in which the lower bicusps and molars had been lost, tartar had completely encrusted the crown of an upper molar, increasing its size materially, and lengthening it so that it occluded with the lower jaw, thus forming a masticating surface which had shaped itself to the inequalities presented.



Teeth found in graves at Copan, Honduras :

- No. 1. A cuspid, from which the inlay had been lost, the cavity remaining unfilled.
 No. 2. Cuspid tooth, in which there was an inlay of green jade stone, inserted near the cutting edge.
 No. 3. A central incisor containing an inlay of green jade ; filed nearly to the inlay.
 No. 4. A central incisor containing a jade inlay. It is filed in the same manner as No. 3, but not so far across the cutting edge.
 No. 5. A cuspid tooth from which the inlay had been lost ; broken through from the cutting edge to the cavity of the inlay.
 No. 6. Cuspid tooth filled with a red cement—perhaps after the inlay had been lost.
 No. 7. Central incisor filled like No. 6 ; probably from same reason.
 No. 8. Central incisor containing a green jade inlay.
 No. 9. The stone tooth which was implanted in the socket of a left lower lateral incisor.



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The filing had produced no caries or other changes, except where the pulp had been encroached upon, as it had in at least one instance. There seemed to have been in this case a recalcification of the tissue at that point. Further study of the interesting relics will be made as soon as they are properly arranged, and I shall be glad to furnish you with an account of any other points of interest discovered.

Very truly yours,

CAMBRIDGE, Mass., September 18, 1893.

R. R. ANDREWS.

LETTER FROM DR. CUNNINGHAM.

The following letter from one who, perhaps as well as any one, comprehends the true inwardness of the extraordinary action on the part of English dentists, will be read with interest, as being the first expression from the other side. It embodies the notes of that which Dr. Cunningham has written for publication in England.—[EDITOR.]

Editor Dental Practitioner : The attitude of the British Dental Association has given rise to so much comment on both sides of the

Atlantic, that any information likely to remove unfortunate misconception, or to explain apparent national antagonism to the World's Columbian Dental Congress, will be welcome to many. The majority of British dentists have never really had an opportunity of understanding the situation, while many of those who voted on the question did so in the midst of what seemed inextricable confusion. A brief historic retrospect of the movement will best explain the nature of the situation.

Although the germ-idea of such a congress originated in the American Dental Association, as far back as 1885, the first public announcement of the intention was made in Paris, at the First International Dental Congress, a fact sufficient in itself to refute the imputation of any desire to hold an independent congress, in opposition to a dental section of an International Medical Congress. At that time, in view of the probability that the World's Columbian Exposition would be held in 1892, official invitations were offered on behalf of four of the five then existing dental societies, for a meeting in Chicago. Subsequently, it was decided to hold the Exposition in 1893, instead of 1892. Thereupon the American Dental Association and the Southern Dental Association, the two national bodies, appointed an organizing committee of fifteen members, which met in August, 1890, and authorized the issue of a circular, stating the general objects of the Congress. This circular was published in all the American journals, and sent to every foreign dental journal, in December, 1890, or January, 1891, and with the exception of the prospectus and the printed invitations, one to the dentists of America and the other to those of foreign countries, issued in March, 1893, no other official circular was issued or authorized by the General Executive Committee.

It is almost needless to say that none of these communications contain a single phrase which could possibly excite even the most hypersensitive national susceptibility.

In October, 1891, that is, nearly a year after the publication of the first circular, an organization under State control, and with State support, entirely independent of dentistry, and known as the World's Congress Auxiliary, was created for the purpose of carrying out a series of literary, scientific, industrial and professional meetings, of which the Dental Congress was the Hundred and Twenty-first. In pursuance of its functions, the World's Congress Auxiliary, ignorant of the existence of the General Executive Committee already formed, appointed a committee for the purpose of organizing a dental congress. This committee met but once, when it was decided to merge its interests and efforts with the organization appointed by the dental associations. The Women's Branch of the Congress Auxiliary also appointed a similar committee of

women dentists. The Auxiliary Committee, in the name of these two committees, issued two circulars in almost identical terms, and similar to those relating to other congresses. This circular was never submitted to or approved by the General Executive Committee of the World's Columbian Dental Congress, nor even by its own committee of organization, previously referred to.

In January, 1892, the General Executive Committee, after about eighteen months existence, accepted the invitation of the World's Congress Auxiliary to hold the dental congress under its patronage, with suitable accommodations in the art building. Committees were also formed by the Congress Auxiliary for carrying out several medical congresses. The attempt to secure the regular triennial medical congress was abandoned, because of the meeting which was to be held in Rome, and of that of the Pan-American Congress, at Washington. The proposal to hold the dental congress in connection with either the Homœopathic or Eclectic Medical Congresses, was very properly rejected, but no objection was offered to its being grouped with the Pharmaceutical, Chemical, Electrical, or Philosophical Congresses.

Certain passages in the circular issued by the World's Congress Auxiliary, which were, to say the least, very injudicious in their nature, caused an outburst of feeling in England, which led to the rescinding of the resolution already adopted there, appointing delegates from the Odontological Society of Great Britain. The invitation to send delegates emanated solely from the Congress Auxiliary, and was forwarded through the State channel of communication, the Royal Society of Arts. Indeed, the General Executive Committee first learned of the existence of this circular and the invitation to send delegates, from the private letters of some of those who had been selected as honorary officers for Great Britain.

It was not surprising that under such circumstances, and the near approach of the Congress, the exact nature of the situation was never fitly comprehended on either side. Anticipating similar action on the part of the British Dental Association, an official letter of explanation was hurriedly prepared for the last annual general meeting, and addressed to the President. Unfortunately this letter, arriving in the midst of the turmoil of preparation for a busy meeting, was overlooked through the illness of the Honorable Secretary, and was only forthcoming at the last moment, when the proceedings were about to be closed. A meeting was held of all those members of the British Dental Association present who had been appointed as honorary officers, or upon committees, including Messrs. Macleod, Mummery, Woodruff, Coffin, Baker, Harding, Spokes and Cunningham. After considering the objectionable World's Auxiliary circular, and the letter to the President of the Odontological Society

explaining that the circular did not emanate from the General Executive Committee, it was unanimously decided that, as the matter had not officially come before the British Dental Association, it would be sufficient to propose that a delegation of five or six members, including the President, be appointed to represent the association at the Congress.

Next morning a private letter was received, announcing the despatch of the official letter to the President of the B. D. A., and this was succeeded by an inquiry which resulted in the finding of the missing document.

The proposal of the previous night's meeting was formally made, and lost by an overwhelming majority, while a large number abstained from voting, simply from their inability to comprehend the situation fully, and their impatience to close an unduly protracted meeting. Had confidence been placed in the carefully considered resolution of those members who made it, the fair name of the National Association would not have been besmirched by the refusal to accept the explanation of an honorable body of men as to the authenticity of that circular, and by the churlish rejoinder to the magnificent proposal made at Manchester, to hold the annual meeting of the association at Chicago. Had this proposition been accepted, the subsequent misunderstandings would not have arisen; for the Congress Executive Committee would probably have retained the full management of affairs, and there would have been no opportunity for the issuing of the objectionable circular by the Congress Auxiliary. English and American dentists, being brought in contact, would have learned to respect each other, and many a prejudice that has no real foundation in fact would have been dispelled. Each would have discovered that, while the methods of the other were different, both were at heart animated by the same earnest desire for the best interests of our common profession, and the world might have witnessed the inspiring spectacle of all English speaking peoples, animated by the same spirit, moving on, hand in hand, toward the same common goal.

It was needless to disclaim that the refusal to send delegates was intended to interfere with the attendance of individuals. It *did* interfere most seriously with the attendance from Great Britain, and not improbably with that from other foreign countries. It is a pity that a factional spirit, consciously or unconsciously imbued with a sense of professional superiority, should have deprived many of participating in the benefits of assisting at what was one of the most important, one of the most instructive, and one of the best conducted events in the history of our common profession. I am

Very truly yours,

GEORGE CUNNINGHAM.

THE DENTAL PRACTITIONER

AND ADVERTISER.

DR. W. C. BARRETT, EDITOR.

BUFFALO, N. Y., OCTOBER, 1893.

A RETROSPECTIVE VIEW OF THE CONGRESS.

The World's Columbian Dental Congress has become a part of our professional history. It had its own tribulations, and that under the circumstances it scored so much of a success is a matter for congratulation. It was handicapped from the first with a number of dead weights. In the first place, there was the usual professional jealousy that ever induces the "outs" to oppose the "ins." Then there was the lukewarmness caused by the impression that it in some way threatened the Dental Section of the Medical Congress. There are two parties among us, who hold conflicting views; one that dentistry is a part of medicine, and that the best interests of all concerned lie in a close affiliation with the parent profession; that students should be educated from the medical standpoint, and should practice as medical specialists. The other maintains that dentistry has little in common with medicine, and that its interests, because it is so largely mechanical, lie in pursuing an independent course. The Columbian Congress was by some erroneously understood to be representative of the latter class, and hence a considerable number of the other wing held aloof, or discouraged the scheme. They believed, too, that it was in the hands of the politicians of the profession.

Then there was a division of opinion over the election of the officers. A considerable number condemned the manner in which this was done, and lost their interest in the meeting. It should, in all fairness, be stated that the event rather justified the choice made, for the most of the active officers proved to be very efficient. There was dissatisfaction expressed with the President, as not being sufficiently a representative man, or one who had been widely recognized as a writer or original worker, and the support of the New England States was lost, because the dentists there had not enough of professional feeling to sink their personal dislikes in their desire for the success of the meeting. Dr. Shepard unfortunately is not one of those who can conciliate, nor has he

that suavity of manner which might enable him to perform a disagreeable duty in a graceful style. Hence he has been charged with arbitrariness and absolutism. But he presided with dignity, and there was never any wrangling upon the floor, a spectacle not altogether strange to such meetings. The President, after all, is but a figure-head, and if he is wise he will quietly acquiesce in that view and govern himself accordingly, without attempting actively to direct matters.

But the greatest troubles and trials came from a divided responsibility. The World's Congress Auxiliary nearly wrecked the Congress itself, and was responsible for a breach between the profession of England and America, as unfortunate as it was unnecessary, had the situation been comprehended abroad. The Executive Committee of the Congress paid very dearly for its complaisance to the Auxiliary. The latter organization, having no affiliation with or responsibility to dentistry, assumed direction of affairs at the outset, and it was not until things were on the high road to ruin that it was pushed aside, and the Congress Executive Committee assumed its true functions. How infinitely better would it have been had the latter secured its own place of meeting, and held the Congress independent of the World's Congress Auxiliary, which, so far as an outsider can judge, did nothing but embarrass it.

But despite all these perplexities, notwithstanding the defection of our English brethren, upon whom we had the greatest claims, and whose support the officers had the best right to anticipate, in the face of the injudicious puffing and unprofessional gasconade of some earnest supporters of the Congress, it reached a point that was unanticipated by the better informed among the society men. There was not the presence of the three or four thousand members who were confidently claimed some months ago, but there was a large membership. The papers and discussions were better than might, under the circumstances, have been expected, while socially there was the best of good feeling, and never before at a professional meeting were so many new friendships formed, or so many old ones yet more closely cemented.

The place of meeting was, on some accounts, about as bad as it could have been, but that was due to the World's Congress Auxiliary, which the Executive Committee allowed to dominate. Whenever a train upon the closely adjacent railroads passed—and that was very frequently—speakers were obliged to suspend their remarks, for nothing could be comprehended. The acoustic properties of the main hall were bad, while the rooms for the Sections were small, and hot, and stuffy to a degree.

It is a question as to whether the organization into Sections was a wise step. In the opinion of many, it would have been better had the

cross-purposes. Our own dignity forbids that we should enter upon any retaliatory action, or make any general expression of our feeling, but it will be a long time before the events of the past year are forgotten.

The situation should not be misunderstood. The withdrawal of the recognition of Harvard and Michigan Universities was entirely justifiable. Indeed, it should never have been granted in the first place, as we do not acknowledge any English qualifications. It was the time and circumstances under which it was done that made the act an unfriendly one. The wanton and gratuitous insult offered the whole American profession at Birmingham, was but another expression of the bitterness existing in the hearts of those who succeeded in bulldozing and browbeating the majority into a position utterly untenable, whether viewed from the standpoint of either justice or courtesy.

The dentists of Great Britain were courteously solicited to take part in a great meeting to be held in America. If they were not disposed to accept of this invitation, there were gracious terms in which it might have been declined. But the truth seems to be, that the Americaphobists discovered that there was a general desire to accept, and that many were planning to visit America at the time of the Chicago meeting. This suited not their spleen, and they seized upon the language of a circular sent out by an organization in no way directly affiliated with dentistry, and one for whose utterances dentists are in no way responsible, and craftily read it to the members of the British Dental Association as emanating from dental sources in America, and thus, in a manner not too honest, created a feeling against the Congress and the profession here, while absolutely refusing to listen to the proper and sufficient explanation which would have made a comprehension of the status easy to all.

No one in this country for a moment believed that such an unauthorized circular as the one issued by the World's Congress (not the Dental Congress, by any means,) Auxiliary, would be ascribed to the dentists of America. Therefore, no attention was paid to it, until American dentists were warned that it was being represented as an emanation from the Dental Congress itself. An unfortunately worded letter of explanation, written in ignorance of the real and delicate situation, was hurriedly despatched, and perhaps served still further to confuse matters, but could not justify its insulting rejection as an explanation of the real origin of the circular. There was even some peculiar juggling connected with its reception on the part of English dentists, and it was not presented until it was too late, else, insufficient as it was, it might have explained away some misapprehensions.

Discourteous, adverse action to the Congress was taken, certain leaders succeeded in placing by the ears the dentists of the two countries, and but a small delegation was present at the Congress from Great Britain.

Those who did come received the honors that might, under other circumstances, have been paid to all of English dentistry. The staying away of the body of the profession did not, however, appear in any way to have interfered with the success of the meeting. They did not seem to be at all missed, and the wheel rolled on, just as if the fly were still perched upon its periphery. As one of their number who was present truthfully remarked, "the loss is all their own," but it seems a pity that men of the mental calibre of J. Smith Turner, whom Americans know as a dental politician only, should have the power to interrupt the friendly feeling that has always existed here towards our English professional confreres.

We honor men like Sir John and Charles Tomes, Howard Mummery, and others who have risen to eminence because of original work done by them for the benefit of their profession and fellow men; but for him who has devoted his life to cabals and political management, mainly to advance his own interests, most men have nothing but contempt, whether he hails from England or America.

IMPLANTATION.

An excellent paper upon this subject was read by Dr. Louis Ottofy, during the meeting of the Congress in Chicago. Unfortunately its presentation was in a section that was but poorly attended, and hence the discussion was not as full as it should have been. He showed that it was first described by Witzel, at a meeting of German dentists, in Heidelberg, in 1881. But it was Dr. Younger who first really introduced the operation, by giving clinics before dentists, and demonstrating its practicability. All in this country, at least, who have performed the operation, obtained the idea and the method of procedure from him. In the face of considerable criticism he persevered, until he has had the satisfaction of seeing it adopted as a recognized method of practice.

It has been condemned because it has not in every case been successful. But this is equally true of every other operation in surgery. People have lost their lives through the mere extraction of a tooth. In extirpation of the larynx, but one case is on record in which the patient lived for more than a few months. Yet no one questions the legitimacy of the operation. Implantation has a sufficient percentage of successes to warrant its performance whenever indicated. It is now an accepted part of dental practice, and every dental surgeon should comprehend its principles, and become acquainted with the best method of performing it.

That it was not at first accepted as practicable, probably arose from a mistaken idea concerning the physiology of the growth and nourishment of bone. We had been taught that this was from the periosteum

exclusively; that the immediate agents in bone genesis were the osteoblasts, and that these were connected with the periosteum. We now know that while all growth is from these cells, they exist wherever there is bone tissue, and are not confined to the periosteal membrane. Indeed, periosteum itself may be, and often is, reproduced when destroyed. Hence there may be interstitial growth of bone, or the formation of bony spicules within the medullary canals of long bones. The living portion of osseous tissue—the lacunal cells—are initial points from which the reproduction of bone may proceed.

There has been a great deal of speculation over the physiological process involved in the attachment of an implanted tooth. Dr. Younger asserts that it is due to the revivification of the pericementum, which he asserts is not dead, even though it may have been dessicated for a considerable time; that the old membrane immediately assumes life, and commences the functions belonging to it, forming new bony tissue, which attaches the tooth in the socket. This is an attempt to harmonize with existing facts the mistaken theory that bone growth must necessarily originate in the periosteum, or its analogue, the pericementum. The truth would rather appear to be that a new membrane is produced, which must of necessity be the connecting link between the tooth and the socket artificially prepared for it.

The physiology would seem to be this: When a tooth is implanted, the osteoblasts encountered in the body of the bone in which the socket is made, become the centers of a new growth, and a new membrane is formed with its osteoblastic layer, while the cavity about the implanted tooth is filled with a bony deposit, and thus the tooth becomes imbedded in a new socket, like that in which it originally grew. But there is one important difference. This newly formed tissue is embryonal in its character, or of a cicatricial nature. All such tissues must in time be substituted by that which is fully developed, or permanent. This is a law which obtains throughout all nature. Undeveloped, embryonal organic structures, pass through certain changes before they become fixed. The cartilage-like exudative deposit about a broken bone, sometimes requires a considerable time before it will firmly unite the fractured ends. It must undergo certain progressive changes in the metamorphosis.

It is the same with the embryonal tissue thrown out around the implanted tooth. If all goes well, it finally becomes firm bone; but like all secondary formations, it is liable to a breaking down process, which may be induced by many things. If during the process of the progressive change some constitutional or local affection shall interfere, there will be a retrogradation, and a breaking down of what has been formed, osteoclasts may assume the functions of the osteoblasts, and there will be a resorption of both tooth and newly formed tissue.

When will this breaking down process be likely to take place? Perhaps the exudate will never be organized at all, and in that case the tooth will not become attached, but will drop out, with the surface of the root as smooth as when it was inserted. Perhaps the newly formed tissue may break down at an early stage in its metamorphosis, and the tooth will be lost within a year. Possibly the embryonal character of the new tissue may be lost, and true bone may succeed it. But this secondary formation, not having the stability of primary bone, is affected by disease or injury, and a retrogressive action takes place. Absorption commences, and does not cease until the tooth which is the center of the enfeebled territory is lost, and this may be years after its insertion.

It will thus be seen that there is always an element of uncertainty attending the process of implantation, but that many threatened dangers can be foreseen, and warded off. Those which are unavoidable, are not enough to forbid the practice, when the circumstances are apparently favorable.

HALT! ABOUT FACE!

W. G. Beers, editor of the *Dominion Dental Journal*, in an editorial in his September number, tells why he is possessed of no degree. He despises the sour things, because when he was a student they hung altogether *too* low for his fastidious taste. He says that he "felt no particular ambition to possess the United States degrees, which were conferred, after four or five months' attendance, upon Italians, Cubans, etc., who could not understand a syllable of the language in which the lectures were delivered, and *thousands of whom* to-day swagger in pretentious superiority over men who despise such teaching, and the cheapness of such degrees."

Dr., or Mr. Beers, has been the recipient of honors at the hands of American dentists who can claim to be *even his* peers. This is not the first time that he has made an ungenerous return for courteous treatment. Heretofore, Canadians and others have jeered at America and American dentistry with impunity. We have not thought it worth while to notice these uncalled for attacks, but the time has come for the abandonment of this policy, and to demand the same courtesy that we ourselves show, for American journals and American dentists have ever spoken respectfully of our Canadian brethren. American professional methods and institutions have always been quite as reputable and efficient as those on the other side of the great lakes, and criminations certainly come with a poor grace from the Province of Quebec. If these braggart claims of superiority are to be continued, no one can blame Americans for demanding either attestation or abjuration.

BREVITY IS THE SOUL OF WIT.

An experienced writer once made apologies for the length of his paper, by saying that he really had not been able to command the time to make it shorter. The faculty of condensing a page into a paragraph is a rare one, and only comes with long practice ; yet it is a very desirable accomplishment, for every one knows that the brief, concise, condensed articles and papers are the ones that receive the best attention. There are very few essayists who can hold the attention of an average audience for more than fifteen minutes, and not even that long, unless there is really something of importance said.

Some of the papers at the Congress were from one to two hours long. Was it any wonder that they provoked indignant comment, and failed to make a deep impression? That which was produced in the first half-hour, was completely erased afterwards. If any one desires to drive a nail home, he should remember that it must be done by a few sharp, quick blows, and not by a long continued, dull pressure.

BIBLIOGRAPHICAL.

A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE. By George W. Warren, D. D. S. Second edition. Illustrated. Philadelphia: P. Blakiston, Son & Co.

Nearly three thousand years ago, a wise man remarked that of the making of many books there is no end. He should have lived at the present day, and witnessed the manner in which quiz compends and professional summaries are turned out. The number of short-cuts to knowledge would have exhausted Solomon's vocabulary of description at the outset.

Byron says :

" 'Tis pleasant, sure, to see one's name in print ;
A book's a book, although there's nothing in't."

Byron was wiser in his day than even Solomon, for he has solved the problem that only puzzled the Jewish sage.

We do not take kindly to these abstracts. They do not contain enough of knowledge to enable a student to have a fair comprehension of any subject, and in their indefiniteness they are almost certain to mislead him. Mere technical definitions, without some study of underlying principles, are worse than useless. Too frequently they are only compilations by ambitious young graduates, who know nothing but books, and hence are unsafe guides, especially in intricate subjects like pathology, that require a ripened judgment and extended personal experience for

their full comprehension. There is no by-path to real wisdom, and he who attempts to find one will certainly be mired in the slough of pretentious ignorance.

Here is a book, for instance, which in a hundred and fifty small pages pretends to cover Dental Pathology, Dental Practice, Dental Anatomy, Dental Surgery, Dental Medicine, Dental Therapeutics, and Dental Materia Medica, and there is room for an appendix containing tables of weights, measures and measurements, an abridgement of the Angle system of practice, with a chapter of directions in cases of emergency, a preface, a table of contents, another of abbreviations, and a very complete index. Such a compilation is scarcely fit for use as a text-book in dental schools.

We can only advise every student carefully to avoid all compends, and to be satisfied with nothing less than a thorough study of principles, if he wishes to be anything else than that most pitiful and worthless of all practitioners, a recipe and specific doctor.

A NEW MEDICAL DICTIONARY. Including all the words and phrases generally used in medicine, with their proper pronunciation and definitions. Based on recent medical literature. By George M. Gould, B. A., M. D. Philadelphia: P. Blakiston, Son & Co., 1893.

Formerly, a dictionary was expected to give only the definition of words, with their correct orthography and orthoepy, and something of etymology, but of late years their scope has been greatly increased, and a complete one is filled with encyclopædic information. Gould's medical dictionary is emphatically one of this class. If one turns to the word artery, for instance, not only does he find the correct definition of the word, but a table of all the arteries of the human system, including their origin, distributions and branches. It is the same with muscles, nerves, plexuses, tumors, etc., etc.

A dictionary should contain all the terms in common use, including those of modern origin. This is especially true in medicine, in which there are constant additions to the vocabulary, and here again does Gould's dictionary exhibit its superiority. If one turns to the word bacteria, or bacili, he finds a number of pages of tables giving the principle characteristics of all the important ones discovered. Under leucomaines and ptomaines there is the same tabulated information, so that the book is something more than an ordinary dictionary. There are very comprehensive tables of weights and measures, wave lengths of light, mineral springs, vital statistics, and many other like matters which it is important that the medical man or dentist should have at hand.

Nor is it alone in its comprehensiveness that the perfection of this work is apparent. Its definitions are models of conciseness and preciseness.

There is enough to give one a clear idea of the subject, without verbiage or diffuseness. A medical dictionary is indispensable to every student, as well as to practitioners, and Gould seems to meet all requirements. It is certainly the equal of any like work extant in every particular, while in some it is immeasurably superior. We therefore unhesitatingly commend it to all who are in need of such a work.

ORTHODONTIA, OR MALPOSITION OF THE HUMAN TEETH, ITS PREVENTION AND REMEDY. By S. H. Guilford, A. M., D. D. S., Ph. D. Second edition. Revised and enlarged. Philadelphia, 1893.

This work was written at the request of the National Association of Dental Faculties, for use as a text-book in the associated colleges. The first edition was received with marked favor, as is demonstrated by its exhaustion in less than three years. The second edition has been materially enlarged and improved, and it now forms a very complete handbook of its subject. It is not a treatise; nor does it pretend to be, but there is sufficient for the use of the average dental student. It is not devoted to the advancement of any special "system," but is made as practical as possible, and for this reason is admirably adapted to the end which its author had in view.

There will be a difference of opinion concerning the virtues of some methods recommended, but the book in the main takes very conservative ground. On page 73 there is an error of fact, in crediting to Dr. Angle things which were not original with him, but as a whole there is little to criticise and much to commend.

DENTAL REGISTER OF THE UNITED STATES. Comprising lists of dentists arranged by States; giving Postoffice addresses, with population and location; date and College of graduation; the various Dental Societies; Dental Colleges; a synopsis of the Laws of Registration, and other laws relating to the profession in each State; Dental journals, with names of Editors, frequency of publication and subscription rates, and an index of the dentists in the United States, alphabetically arranged. R. L. Polk & Co., Publishers, Detroit, Michigan. Vol. I.

A complete and reliable dental directory for the use of members of the profession has long been a desideratum. The principal dental depots have each possessed their own, but they were not at the service of individual dentists. Some societies have spent considerable time and money in obtaining the names of all dentists within a limited area. In some instances directories have been published, but as the names were obtained by correspondence, they were quite unreliable.

R. L. Polk & Co. have for some years published a Medical Directory of the United States, which has become the standard authority, relied

upon by every one who has any use for such a work. The editor of this journal, some time ago, urged upon this old and reliable firm the propriety of issuing a dental directory upon the same plan, but was answered that the sale would be too limited to make it pay. Upon further reflection, however, the publishers determined to get it out, trusting to the future for remuneration, and the result is this, the first reliable dental directory ever issued.

The same general plan has been pursued that has made the Medical Directory such a success. Agents have been sent to every locality, and have there compiled and carefully compared the names. They have not depended upon correspondence, although every dentist has received a postal card asking him to correct any errors in his own registration. Some have not known just what that meant, and perhaps have not answered. They will know the next time, for a new one will be issued every third year.

There is one particular in which the book is not complete. It is impossible to tell just what proportion of the dentists enrolled are graduates. But it is to be presumed that when no answer was returned to inquiries upon that point, that the practitioner does not hold the diploma of any recognized College. At any rate, the fact that no reply was given to the question will probably be so interpreted.

We cannot too strongly urge every dentist to aid in sustaining such a work, for it is a very great convenience in dentistry. The correct name and address of every dentist in the United States may be learned from it, with a great mass of other information concerning registration, legislation, and dental literature. The volume, containing nearly 700 pages, may be ordered of the publishers at Detroit, Michigan.

A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS, WITH ESPECIAL REFERENCE TO THE CLINICAL APPLICATION OF DRUGS. By John V. Shoemaker, A. M., M. D. Second edition. Thoroughly revised. In two volumes. Philadelphia: The F. A. Davis Co., Publishers, 1893.

This work is the broadest in its scope and the most complete in its plan of any like publication that has been lately issued. Prof. Shoemaker has long been known as an authority in his special field, and these two volumes are the result of a lifetime of exhaustive study and clinical observation and experience.

The first volume is devoted to pharmacy, general pharmacology and therapeutics, and such remedial agents as are not usually classed with drugs, like electrotherapy, climatology, diet, mineral springs, rest-cures, massage, and the influence of light, heat, and other like agents.

The second volume is devoted to drugs and preparations of the pharmacopœia. All of those which are standard are considered from their

botanical or chemical aspect, their therapeutical indications, and their physiological action. Nor is the work confined to those recognized in the United States Dispensatory, but all of the valuable new preparations which have been introduced are carefully considered and their virtues noted. As a book of reference it will be especially valuable, because of the convenient and exhaustive plan upon which it is prepared.

The whole work is so indexed as to enable one very readily to find any specially desired information, and hence its contents are always at command. Altogether, this is one of the most noted contributions to the literature of its subject that has ever been presented to the medical profession, and it must form a part of every medical library which makes any pretension to completeness.

NOTES ON ANÆSTHETICS IN DENTAL SURGERY. By Arthur S. Underwood, M. R. C. S., L. D. S., England, and C. Carter Braine, F. R. C. S. Second Edition. London. Claudius Ash & Sons, 1893.

This handbook has for some time been an accepted authority in England, upon a subject which receives much more attention there than it does here. Our English brethren probably extract proportionally more teeth than we do, and the administration of anæsthetics forms a very important part of their dental curriculum. Hence, we naturally look to them for the latest knowledge.

Mr. Underwood gives to American dentists credit for first discovering anæsthesia, a thing which all the world agrees upon. He also admits that nitrous oxide was introduced into England by an American dentist, and he says that the English "therefore owe our transatlantic brethren a debt that can scarcely be overestimated."

Naturally, the greater part of the work is devoted to nitrous oxide, and the directions for its use are in the main very judicious. We do not in this country, however, consider it permissible in any case for a patient to inhale from and exhale into the same bag. We should also take exception to some of the author's remarks concerning the perfect immunity from danger in certain diseases, nor can we credit the assertion that in unfavorable cases respiration always ceases for a considerable time before the heart stops. There are instances on record to the contrary.

The directions for administering ether and chloroform are very judicious, and are quite in line with the observations made in this country. The chapter on the Physiology of Anæsthesia is especially valuable, although the critic might urge that the state is scarcely a physiological one. But physiological action during anæsthesia presents many interesting phenomena, and some of these are very clearly considered.

PSYCHOPATHIA SEXUALIS: with special reference to contrary sexual instinct. A Medico-Legal Study. By Dr. R. Von Krafft-Ebing. Translated from the German by Charles Gilbert Chaddock, M. D. Philadelphia. The F. A. Davis Co. Publishers, 1893.

From either the medical or the legal standpoint, the aberrations and anomalies of the sexual instinct form a very interesting study. All such exhibitions have a pathological aspect, and the philosophical physician finds no difficulty in tracing their genesis to some diseased mental or bodily condition. These step-children of nature, as the author calls them, are too often objects of pity rather than scorn, and their place of detention should rather be the asylum than the prison.

The subject is a delicate and a dangerous one, but in this work of four hundred and thirty pages, it is viewed strictly from the medico-psychological standpoint, and with a view to remedial measures.

There is much in the book concerning sexual bodily and mental characteristics that will be severely criticised by sentimentalists, for the glamour that surrounds that which is called love is often rudely dissipated. The relations of the sexes are very practically considered, and the difference between healthy and abnormal appetites plainly shown. Such assertions as that "the mental inclination of woman is monogamous, while in man it is polygamous," shock our educated sense, but when this is considered from the standpoint of the author, and taken in connection with the fact that the whole book is devoted to neurological studies, it seems, without any reference to anthropology, not inconsistent with the general relations of the sexes. Certainly the book must prove of entrancing interest to the alienist, as well as to the student in medical jurisprudence.

LETTERS FROM A MOTHER TO A MOTHER ON THE CARE OF CHILDREN'S TEETH. By Mrs. M. W. J. Columbian Edition. Philadelphia. The Wilmington Dental Manufacturing Co., 1893.

These letters, written by Mrs. Jeanie M. Walker, have had a wide sale, and have been received with greater favor than anything of the kind ever met before. The reason is that they convey in clear and concise language just the information that every mother should possess. As the wife of a well-known dentist, the mother of a large family, and endowed with unusual literary ability, the authoress was better qualified for the task she set for herself than any woman of our day, and the result was the best handbook of the subject yet written. If it could be carefully studied by every mother, the result would be an improvement in the human race as marked as that produced by careful attention to the breeding of horses and dogs.

CURRENT NEWS AND EXCERPTS.

THE DISCOVERY OF ANÆSTHESIA.

The *British Journal of Dental Science*, in its number for August 15, contains a very interesting paper, read by Parsons Shaw, D. D. S., before the Manchester Odontological Society, giving the history of the discovery of anæsthesia from the standpoint of personal observation. It is the fact that Dr. Shaw was, in the year 1844, and for a subsequent period, so associated with Mr. Colton and Drs. Morton and Wells, that he had abundant opportunity to know all the truths. He details them in an interesting manner, and conclusively proves that to Horace Wells belongs the sole credit of giving anæsthesia to the world. He shows in what manner Jackson and Morton became connected with the discovery, and how they attempted to filch the laurels of Wells, Morton even obtaining a patent for his "Letheon."

As conclusively does he prove that Simpson, who received the freedom of Edinburgh and was knighted for his claims in connection with chloroform, and who was sustained by all Great Britain, borrowed his ideas from the poor American dentist. He obtained wealth and honors, while Wells died in poverty, but he never attempted to do justice to the man whom he so wronged.

Parsons Shaw claims to have introduced nitrous oxide into England, he having ordered an apparatus from America in 1868, at a time when more than a thousand dentists were using it in America. About the same time Dr. Thomas W. Evans introduced it into France. England was slower in accepting this branch of practice from American dentists than she has been in seizing upon others, and was equally slow in allowing credit where it was due.

AT THE CONGRESS.

To our apprehension, nothing of greater moment was presented than the surgical procedure of Prof. Truman W. Brophy, for the radical cure of cleft palate. It consists in a new and daring operation, which Prof. Brophy has performed often enough to demonstrate its feasibility in many cases, to say the least in its favor. It is radical, while most operations are but auxiliary. It is new to surgery, and if it shall stand the test of time it must be the accepted method in every case to which it is adapted.

As high an authority as Prof. Senn, the well known surgeon, pronounces it the most original and meritorious operation that has been presented in surgery during this decade, and he proposes to call it "The Brophy Operation." It should be known by this name, for if it brings honor to dentistry, that honor should be worthily credited.

It is because of these considerations that the paper has been selected as the leading article for this number. There are few in dentistry who are competent to undertake that operation, though there are many who can glibly criticise it. Let it be carefully read by all who take any interest in oral surgery.

WELCOME VISITORS.—The editor of this journal was favored by visits more or less extended from a number of foreign friends who attended the Congress. Among these were Alfred Burne and wife, of Sydney, Australia; George Cunningham, of Cambridge, England; G. O. Whittaker, of Manchester, England; Otto Zsigmondy, of Vienna, Austria; J. E. Grevers, of Amsterdam, Holland; Dr. Bastyr, of Prague, Bohemia, and that cosmopolitan dentist, W. J. Younger, of San Francisco. They had opportunities to meet and enjoy the hospitality of a number of Buffalo dentists.

MONUMENTAL ASSURANCE.

It was impossible to learn in advance the true character of all dentists in foreign countries, who were recommended for attention on the part of the Committees of the Congress, and hence some received invitations who were unworthy. This appears to be the case with W. E. Hill, of Montevideo, Uruguay. In accordance with the recommendation of a responsible party, an invitation was forwarded to him, which he immediately published, with his response, as an advertisement in the papers of that city, and what is yet more surprising, he sent marked copies of the papers to the Committee on Invitation. Whether he is so ignorant of professional ethics as not to know that he was doing a most dishonorable, contemptible action, or whether he did it in a spirit of bravado, does not appear, but Dr. Willie E. Hill, who advertises in the same paper as a "certified specialist" by "the eminent North American specialist, Dr. Horsey, of New York," had he attended the Congress would have found his invitation canceled, and his admission refused.

AN EVIDENT MISTAKE.

New Jersey is not entitled to the honor of originating this Congress, for the writer has a letter from Dr. Harlan, of Chicago, who advised him, as well as others, (including himself) not to accept places of honor on committees of the International Medical Congress, Dental Section, that met in Washington in 1887. He wrote as far back as the early part of 1886, stating that the Medico Dental Section would not be a true representation of dentists, and we would soon try and have a real dental Congress, composed entirely of dentists.—*Columbus, Ga., correspondence Southern Dental Journal, July, '93.*

There must be some mistake about this. Not concerning the inception of the Columbian Congress—no one will dispute about that now—but we cannot believe that Dr. Harlan was disloyal to any work in which the credit of the dental profession was concerned, especially in view of the denunciations of treachery in connection with the Columbian Congress.—[EDITOR.]

A BAD TASTE IN THE MOUTH.

It must have given our foreign friends a singular idea of the ethics which prevail in Chicago, when upon the back of the menu in a cheap restaurant, they found the advertisement of a dental college that is represented in the National Association of College Faculties, and which is located in the same building. It commenced: "Go to the Operating Parlor of the American College of Dental Surgery, on floor above. Your teeth will receive careful and proper attention at a very moderate cost."

It was probably anticipated that the tough steaks of the restaurant might be suggestive of the dentist, and hence it was well to call attention to the proximity of a school of dentistry. But what an example to set before a class of students. We hope this is not a sample of the ethical instruction given in that college, or we might expect them to turn out advertising quacks to a man. If the college in question has any self-respect, or regard for professional interests, it should withdraw such advertisements, especially during the sessions of a World's Dental Congress.

THIS NUMBER.—We need make no apologies for devoting nearly the whole of this number to the Columbian Dental Congress. It was the most important professional event of the year, and the readers of THE PRACTITIONER will be interested in knowing just what was done. To this end an abstract of the week's transactions has been made, condensed to the limits of the journal. We are largely indebted to the daily edition of *The Dental Cosmos* for the necessary data.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

This body met in Chicago on August 10th. All of the colleges belonging to the Association were represented. The meeting was one of considerable interest, and convened for two days. The most important action taken was the adoption of a resolution tending to a greater uniformity in the preliminary examination of students. It provides that a committee shall be appointed to formulate a series of questions and subjects, and to establish a minimum standard for admission. This is a step that has been sadly needed, for heretofore the Deans have been given too great latitude, and could admit almost any one by making his examination easy. If now a rigid rule shall be adopted and enforced, the accepting of those who do not come up to a clearly established standard will be stopped.

The applications for membership of the University of Buffalo, Dental Department; the Western Reserve University, Dental Department, of Cleveland, Ohio; and Howard University, Dental Department, of Washington, D. C., were received, and under the rules lie over for one year. Detroit College of Medicine, Dental Department, was elected, while the application of the Homœopathic Hospital College, Dental Department, of Cleveland, was referred back to the committee for further investigation. The application of the Western Dental College, of Kansas City, was again laid over for one year. The application of the United States Dental College, of Chicago, was rejected. The officers elected for the ensuing year were:

<i>President</i> ,	H. A. SMITH, of Cincinnati College.
<i>Vice-President</i> ,	C. L. GODDARD, University of California.
<i>Secretary</i> ,	J. E. CRAVENS, Indiana College.
<i>Treasurer</i> ,	W. H. MORGAN, Vanderbilt University.
<i>Executive Committee</i> ,	{ J. TAFT, University of Michigan. A. O. HUNT, University of Iowa. FRANK ABBOTT, New York College, JAMES TRUMAN, University of Penn. THOS. FILLEBROWN, Harvard University W. H. EAMES, St. Louis College.
<i>Ad Interim Committee</i> ,	{

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twelfth annual meeting of this body was held in Chicago, August 11th. Fifteen States were represented, namely: California, Illinois, District of Columbia, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Mississippi, New Jersey, Ohio, Pennsylvania, Tennessee and Wisconsin.

The most important action taken was the passing of a resolution providing that when a certificate of registration, obtained on examination by any State Board of Dental Examiners duly created by law, shall be presented, it shall entitle the holder to registration without an additional examination, in any State of the Union having a law to regulate the practice of dentistry.

Reports were received from the various State Boards. Of the recognized schools, for the season of 1892-3, the number of students was: Freshmen, 1,429; juniors, 927; seniors, 433. Graduates, 320. Of the unrecognized schools, the number of students was: Freshmen, 111; juniors, 54; seniors, 22. Graduates, 20.

The officers elected for the ensuing year were:

<i>President</i> ,	C. S. HURLBERT, Massachusetts.
<i>Vice-President</i> ,	M. H. CHAPPELL, Indiana.
<i>Secretary and Treasurer</i> ,	J. D. HODGEN, California.

WOMAN'S DENTAL ASSOCIATION.

The meeting of the Woman's Dental Association of the United States, was held in Chicago, August 18th. Between thirty-five and forty women practitioners were present. Reports from the vice-presidents in the several States were presented. It was found that the present location of about one hundred and fifty women dentists were known, though there were others who had not responded to the letters of inquiry, and hence were not included in the list.

The officers were :

President, DR. MARY H. STILWELL.
Secretary, DR. ELIZA YERKES.
Corresponding Secretary, DR. ANNA T. FOCHT.

THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

These bodies met in Chicago just before the opening of the Congress, but nothing of importance was done. The Executive Committee of the American had arranged everything in advance, and the members were simply permitted to vote affirmatively. The officers were re-elected by acclamation, and Old Point Comfort was selected for the next place of meeting. All reports were postponed until the next year. A few moments sufficed to carry out this programme, when the meeting adjourned. It was not thought best to bring up any matters that might distract attention from the Congress.

JOURNALISM AT THE CONGRESS.

The Dental Cosmos, *The Dental Review* and *The Dental Tribune*, all published daily editions during the session of the Congress. The first two gave complete *résumés* of the daily proceedings, the *Cosmos* sending stenographic reporters to the meetings of each of the sections, and publishing abstracts of all the important papers read.

The Review also had a large corps of reporters at work, and its daily edition, true to its name, furnished a very complete "review" of all that was done.

Both journals did themselves great credit by what they achieved. The *Cosmos* not only removed its publication office to Chicago, but it organized a complete staff on the ground, and under the direction of Editor Kirk, without display or apparent effort, presented at the close of each day a complete abstract of all that had been done. *The Review* being at home, and on its own ground, was enabled to utilize all the resources of its own office, and thus to accomplish wonders.

THE INTERNATIONAL MEDICAL CONGRESS.

There seems to have been an unlimited amount of indecision concerning the meeting at Rome. Half-a-dozen times have we been informed, apparently from official sources, that the Congress had been postponed, only to receive news, apparently quite as reliable, that it would be held. It was impossible absolutely to know what was to be done, until September had come and the meeting had not convened, when it was inferred that it would not be held this year. We conclude that Dr. Kingsley, who issued manifestos for America on the part of the Dental Section, and who went to Europe to attend it, will of necessity flock by himself and hold an independent Congress of his own—which would certainly be worth the visiting. The latest bulletin was that the Congress is postponed until next April.

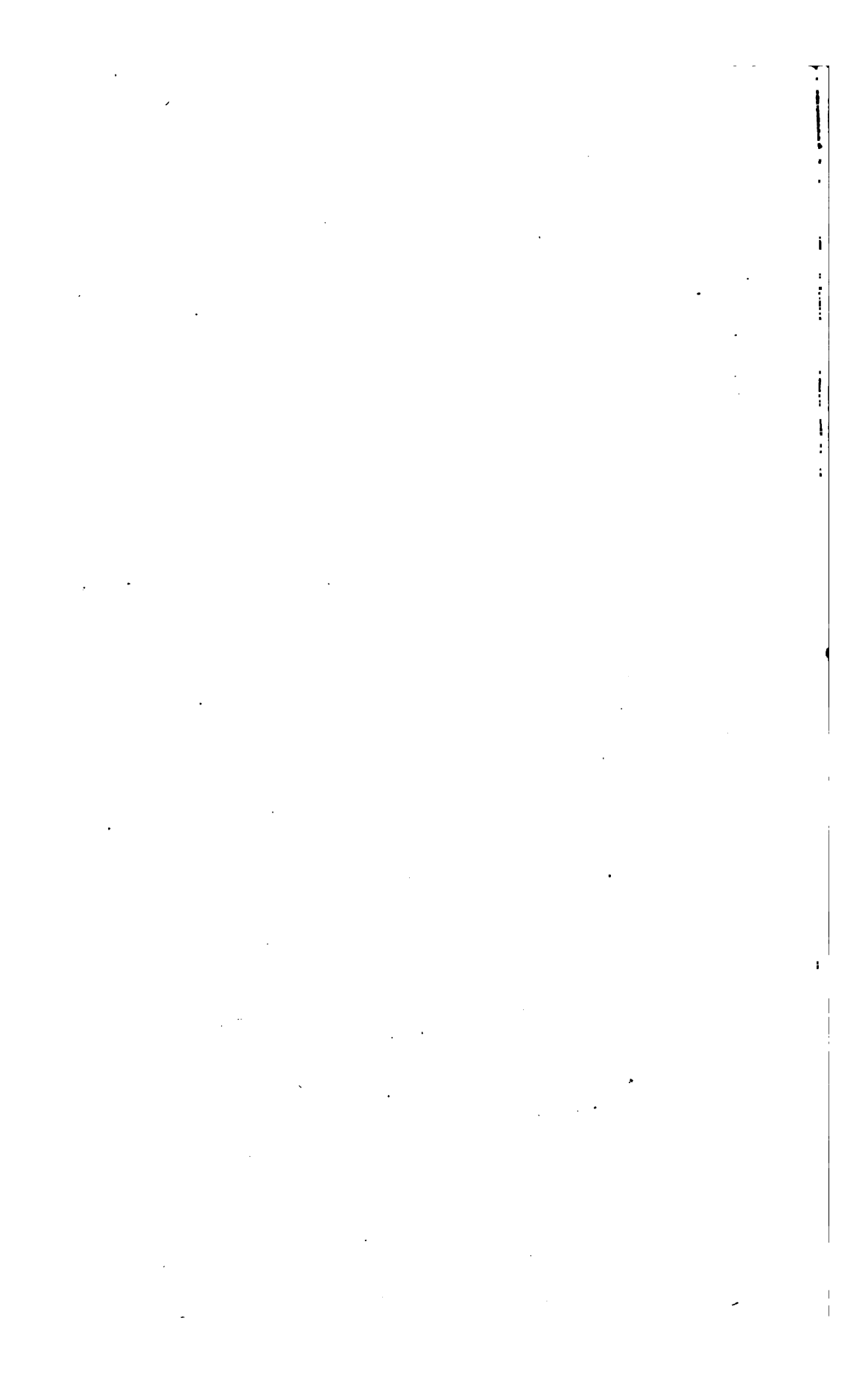
HAWAIIAN SKULLS.—The editor of this journal was so fortunate as to secure several of the early Sandwich Island skulls, exhibited by Dr. J. M. Whitney, of Honolulu, at the Congress in Chicago. In type they resemble those of the ancient Mound-builders of this continent, in the great breadth at the base, and the evident unusual development of the sphenoid bone. They are median brachy-cephalic, with very broad and strong lower jaws, the rami being especially developed. In cranial capacity they are apparently not equal to the Mound-builders, but considerably exceed those of the Mexican Toltecs. There are a considerable number of wormian bones, but none of such size as are found in the Mound-builders, though exceeding those found in the average North American Indian. In more than one of them we have found what was not before noticed, evidences that in early life trephining had been performed.

THE WORLD'S FAIR AND THE CONGRESS.—It is a question whether the Fair helped or hurt the Congress. Certainly it called many dentists to the city, and thereby added to the membership. But it attracted them away from the sessions, and so injured the daily attendance, and distracted the attention of the members. The best meetings are always held where there is little else to engage the mind. The sessions of the American Dental Associations are always dry and dolorous when the meeting is held in a large city. The members are seeing the sights, and do not come back promptly, if at all. Had the Congress been held at Niagara, for instance, there would not have been as many present, but the sessions would have been better attended. Of the eleven hundred dentists at the Chicago meeting, it was seldom that three hundred were in attendance at one time.

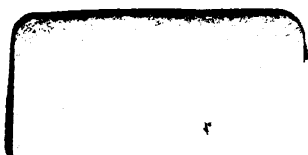
NEW DISK CARRIER.—We have purchased in the past a great many disk carriers of different patterns, only to discard them after a brief trial. The only thing that could be depended upon was the old-fashioned, clumsy, screw mandrel, that demanded the use of a vise and screw driver to mount the disks. But for sometime we have been using, with constantly increasing satisfaction, one that is offered to dentists by Dr. George A. Maxfield, of Holyoke, Mass. It is so simple, and yet so effective, that it is a wonder it was not discovered before. Heretofore we have been obliged to keep a number, and depend upon the chair assistant to mount the disks, but with this the disk can be changed more quickly than the mandrel could be removed from the engine.

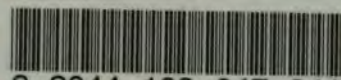
THE DELTA SIGMA DELTA.—The Beta Chapter of the Dental Greek Letter Society kept open house during the time of the Congress. Elegant apartments in the Brunswick Hotel, immediately across the street from the place of meeting, were secured, with all necessary conveniences for visiting brethren, where they were made welcome at all times. Sessions of the Grand Chapter were held, and a number of distinguished foreign visitors were elected and installed as honorary members, thus giving the fraternity representatives abroad. Among these were Drs. George Cunningham, of Cambridge, England; J. E. Grevers, of Amsterdam, Holland; Alfred Burne, of Sydney, Australia, and G. C. Daboll, of Paris, France. A number of well-known American dentists were also elected.

AN UNFORTUNATE OMISSION.—It is to be regretted that the name of the late Dr. W. W. Allport was not presented at the Congress. Up to the period of his demise he had been so prominently connected with it, he had done so much to further its interests, there was such an impression abroad that he had been unjustly treated by some of the management, that it would have been but the proper thing to do had some graceful tribute been paid to the memory of this honored veteran.



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